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THE

NATURAL NUMBER PRIMER

BY

DAVID GIBBS, S.B. (HARVARD)

FORMERLY SUPERINTENDENT OF SCHOOLS, HUDSON AND GROTON, MASS., AND
DIVISION SUPERINTENDENT OF SCHOOLS, PHILIPPINE ISLANDS.

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NATURAL NUMBER PRIM.

W. P. I

PURPOSE AND PLAN

IT is the purpose of this book to present the elementary ideas of number in the simplest form and language possible. It is a book for the use of the child in his first year in school, supplementing the work of the teacher.

The first step in the learning of number consists in giving to a group of objects a number-name by counting. Counting has little value except that it makes possible the definite comparison of groups of objects or of units of measure. The ordinary child, on entering school, is able to make an indefinite comparison of groups of objects and also, to some extent, to count.

The first work in number in school should be based upon these elementary number ideas already in the mind of the child. From these ideas this book leads the child first to count and to distinguish at sight groups of objects involving numbers under or including five, and then to combine and to separate these groups, giving, in the simplest form, additions and subtractions and the statement of arithmetical problems. Experience and tests have shown that most pupils, after a little practice, readily recognize, without counting, groups of objects under five. Later, these groups are used as units in counting.

The work is based largely upon the child's ability to count, which is easily acquired because of its rhythmical and objective interests. It is best to teach, first, the number-names of a series by rote, taking them in groups, as from one to five, five to ten, to twenty, and to a hundred, as the child progresses, and then apply these names by counting objects.

Counting is a series of additions if its results are increasing, and of subtractions if its results are diminishing. Thus, for example, in counting balls, 2, 4, 6, 8, etc., at each count two balls are added to the result of the preceding addition and only the sum is stated, but the complete statement is as follows: 2 balls and 2 balls are 4 balls, 4 balls and 2 balls are 6 balls, etc.; and in counting backward two balls at each count are subtracted from the remainder of the preceding subtraction; 8 balls less 2 balls are 6 balls, 6 balls less 2 balls are 4 balls, etc.

In this way, by using ones, twos, threes, fours, and fives, as units of counting both in an increasing and a diminishing series, all of the elementary addition and subtraction facts may be easily and quickly learned.

Following the series of countings in this way, naturally are arranged the series of multiplications and divisions by twos, threes, fours, etc., and the common fractions. For purposes of review and further drill some or all the facts relating to any number are brought together.

The ability to count must be acquired before quantities can be measured. Mensuration involves the comparison of groups of units as well as accurate estimation. It should, therefore, be preceded by sufficient drill in counting and by comparison of ordinary objects for the training of the eye and the learning of the language of comparison.

Much care has been taken to develop objectively a simple, practical vocabulary. The problems and statements are given in the simplest form possible. The new words are introduced in script. The book may therefore be used not only as a number primer, but also as a language primer during the first months in school, or it may be used in connection with the regular primer or first reader.

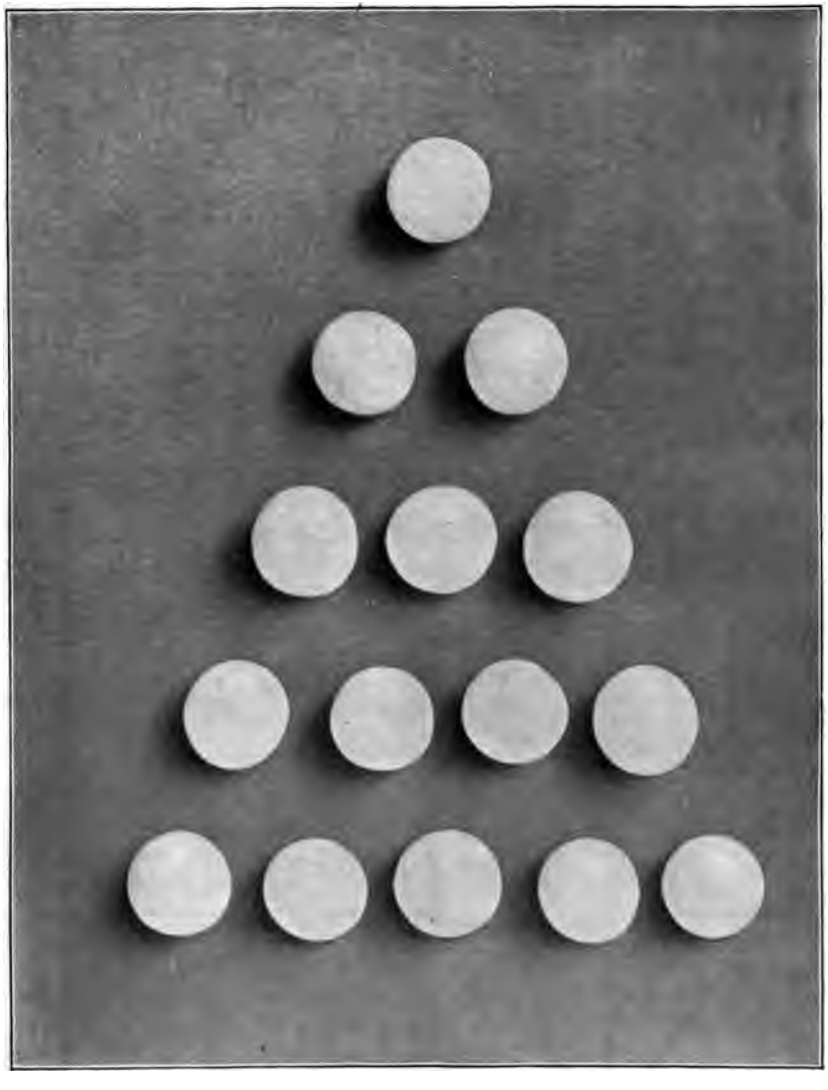
In nearly every lesson there are a sufficient number of problems in script for the written work. The drawings are made very simple so that they may be easily copied, and clay modeling, stick laying, and paper folding are connected with number to give greater interest, a wider application, and closer correlation with other subjects.

No limit is set upon the progress which may be made by any pupil. The lessons are so arranged that they start the child on endless series of operations which he can pursue as far as his ability or time will permit.

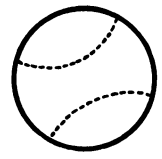
The oral work outlined in the footnotes should be given in advance of the written and should go far beyond the arbitrary limit set for the written work. New words and facts should first be taught from objects and blackboard.

By following the method outlined in the footnotes, it is believed that the teacher will secure the most effective development of the subject.

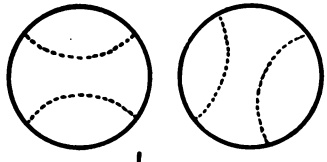
CLARK UNIVERSITY.



Teach the pupils the number names, "one," "two," "three," "four," "five," and then to count, using many objects. Pupils make balls of clay.



one

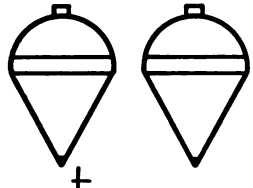


two

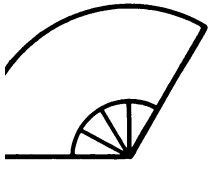
one

two

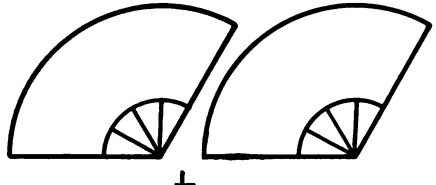
one



two

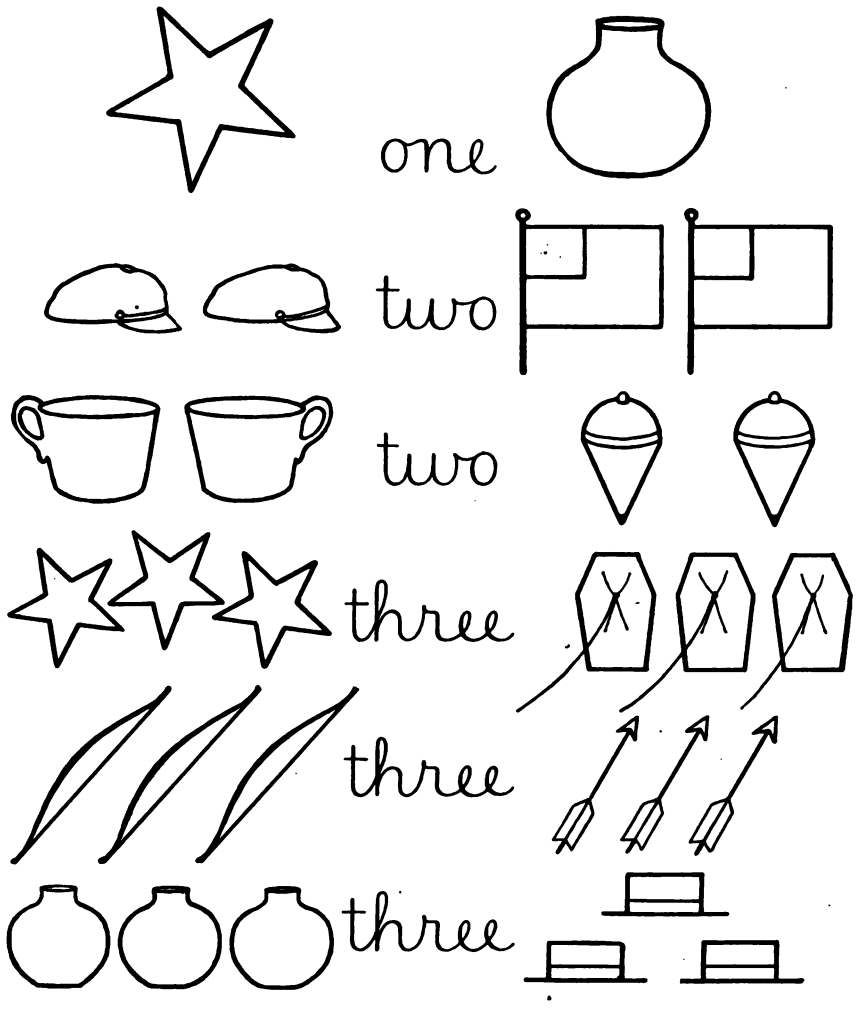


one



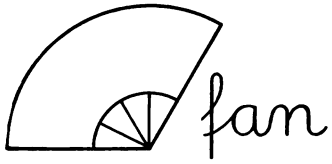
two

ach the words "one," "two." Teach orally, "ball," "cap," "top,"
' and their plurals. Pupils should read: "One ball," "Two balls," etc.,
py, if possible, drawings and words. Use orally, "I see one ball," etc.
ue counting.



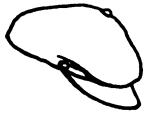
Teach the word "three," and orally "star," "jar," "flag," "cup," "kite," "bow," "arrow," and "hat." Ask pupils to find two hats, etc. Continue use of "I see," "I have." Pupils tell the number of objects in groups to five.

one two



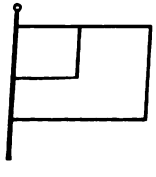
fan

one fan two fans

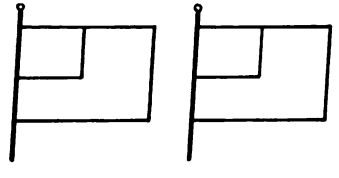


cap

..... cap ..... caps

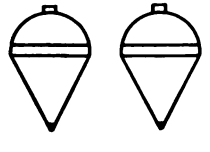


flag

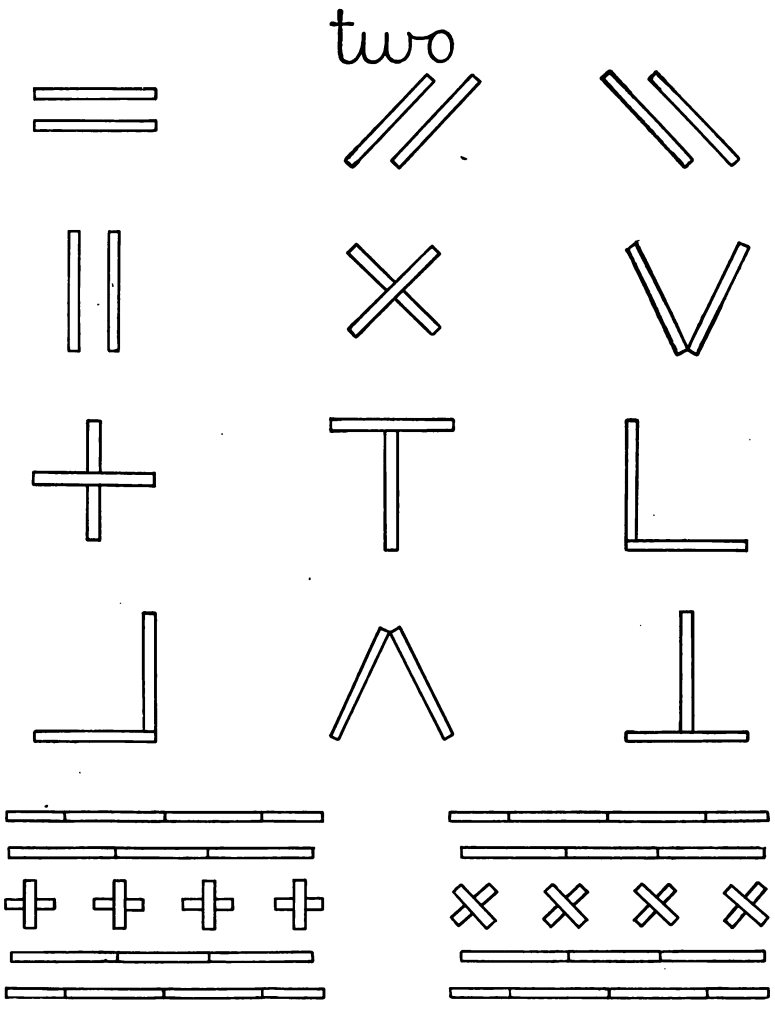


..... flag ..... flags

I see two tops.



Teach from the blackboard with objects and drawings the words "fan," "fans," "cap," "caps," "flag," "flags," "tops," and "I see." Teach pupils to read and fill blanks, copy drawings, and, if possible, the script.

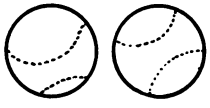


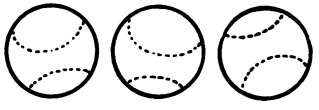
Sticklaying. Give the pupils sticks. Pupils should copy by laying the sticks on their slates. Sticks may be made of split wood, straw, etc., about one inch long.

one two three

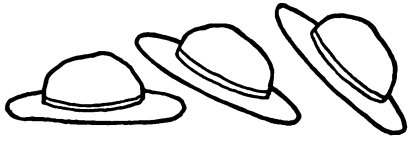
cup

..... cup three cups

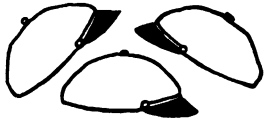
 balls



..... balls ..... balls

 three hats

I see ..... hats.

 I see ..... caps.

Teach the words "cup," "balls," "hats." Pupils read, filling blanks, then copy. Use orally, "I see," "Here is," and "Here are"; as, "Here is one cup," and "Here are three hats." Continue counting objects, sounds, words, actions, etc. Teach number names to ten.

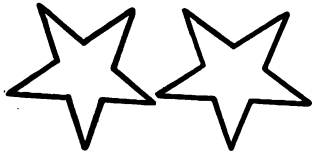
one two three

one big fan

..... big cap

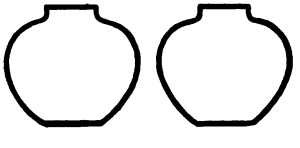
two little caps

..... little fans



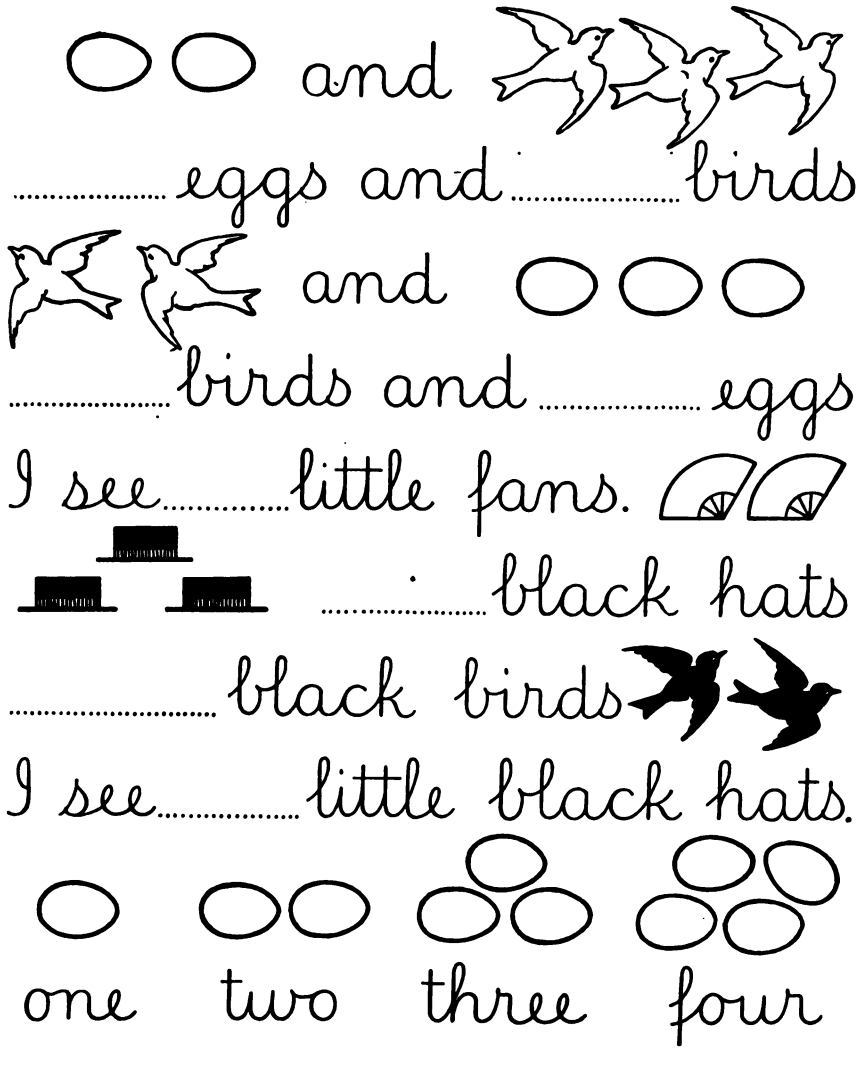
..... big stars

three little jars



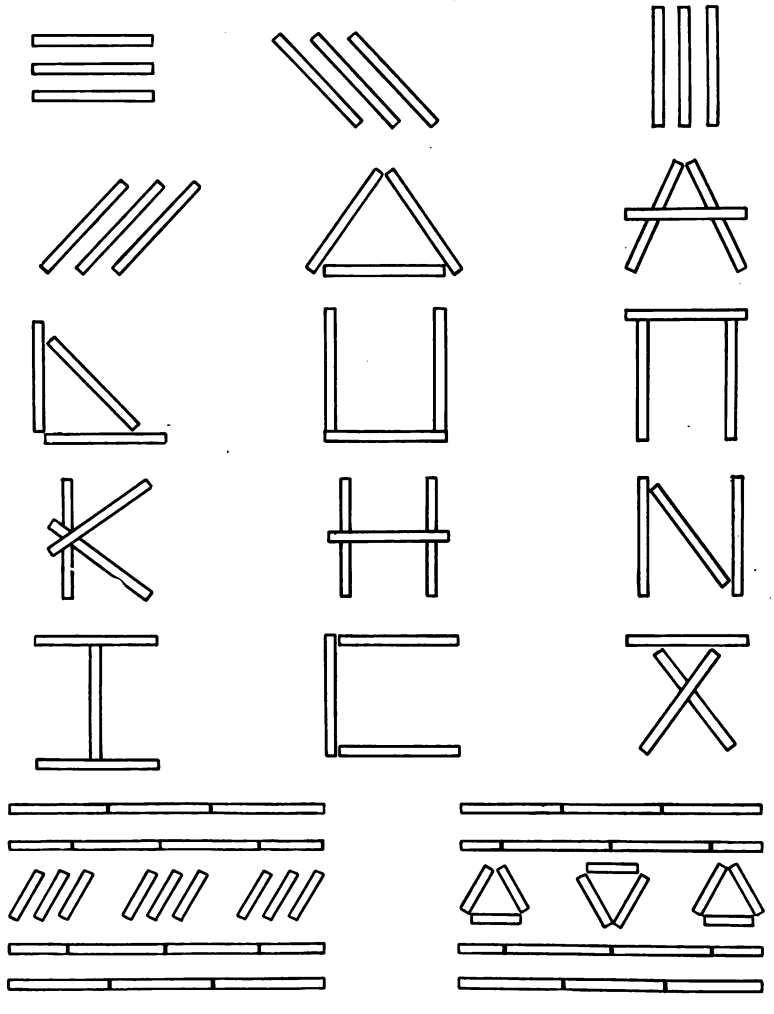
..... big jars

Teach "big," "little," and apply to objects. Use orally "I see," "Here is," and "Here are." Pupils read, then copy drawings, and, as they can, the script. Teach pupils to know groups of twos and threes without counting.



Counting objects to six or more. Teach "and," "birds," "eggs," "black," and "four." Drill on knowing groups of twos and threes.

three



Sticklaying as on page 5.

one two three four

four caps

four birds

I see ..... black balls. ●●●●

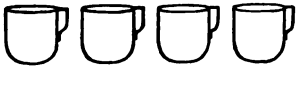
I see ..... little black birds.

I see ..... big white caps.

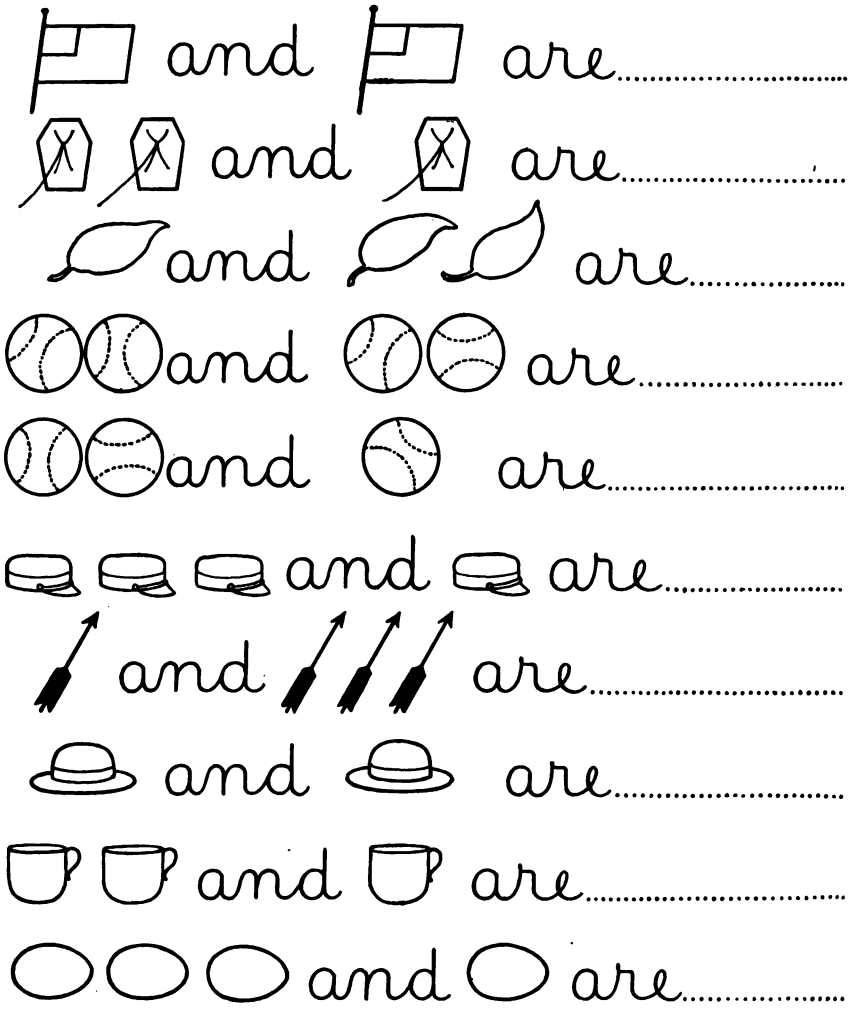
Here is ..... white star. ☆

Here are ..... stars. ☆☆

Here are ..... cups.



Teach "four," "Here is," "Here are," and "white." Teach new words from objects and blackboard. Each child should be allowed to copy the drawings and script as he can.



Teach "are." Teach pupils to read and fill blanks orally, copy the page, and draw the sums. Have oral drill with objects. Continue drill on knowing at sight groups of twos and threes. Count by 2's to 6 or more.

and are.....

and are.....

and are.....

and are.....

and are.....

and are.....

and are.....

and are.....

See page 11.

and are

One fan and one fan

are ..... fans.

and are .....

Two caps and one cap

are ..... caps.

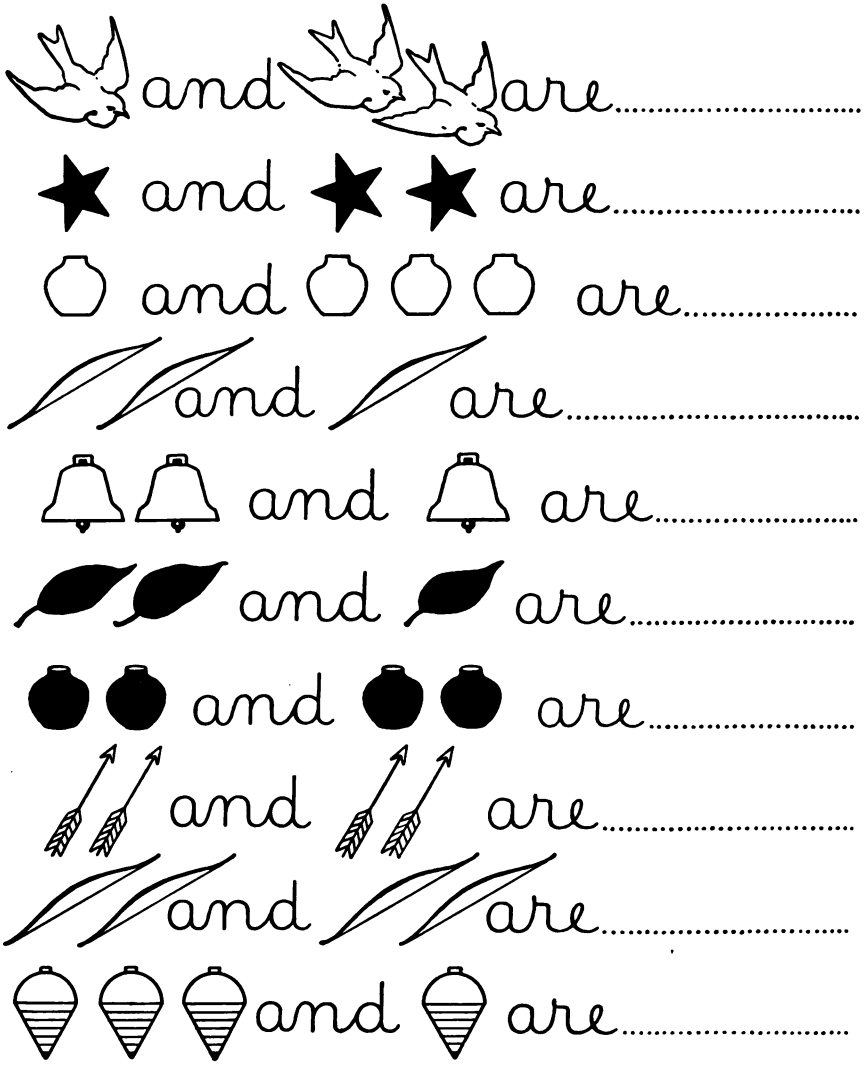
and are .....

Two bells and two bells

are ..... bells.

Here I see ..... fans.

Teach "bells." Pupils read and complete the problems. Have oral problems — use objects when necessary.

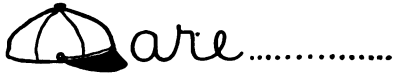

and are.....
and are.....
and are.....
and are.....
and are.....
and are.....
and are.....
and are.....
and are.....
and are.....

See page 11.

and are

One fan and one fan

are ..... fans.

and  are .....

Two caps and one cap

are ..... caps.

and are .....

Two bells and two bells

are ..... bells.

Here I see ..... fans.

Teach "bells." Pupils read and complete the problems. Have oral problems — use objects when necessary.

Here are.....birds.

Two birds and
two birds are.....birds.

One bird has.....wings.

Two birds have.....wings.

Two wings and two
wings are.....wings.

Two pigs and two
pigs are.....pigs.

I see.....pigs.

Teach "has," "wings," and "pigs." Drill on two and two. Count orally by 2's to 6 or more.

Three pigs and one pig
are.....pigs.
One fan and three fans
are.....fans.
Two birds and one bird
are.....birds.

Two ears
and two ears are.....ears.

Two eyes
and two eyes are..... eyes.

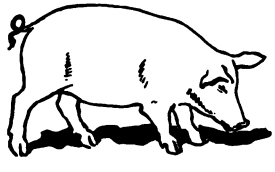
Teach "eyes," "ears." Count objects by 1's to 10 or more. Teach number names backward from 6. Allow bright pupils to do all they can.

A boy has . . . arms.
A boy has . . . legs.

A girl has . . . hands.
A girl has . . . feet.

A bird has . . . wings.
A bird has . . . eyes.

A pig has . . . feet.
A pig has . . . legs.



I have . . . feet.
I have . . . arms.
I have . . . hands.
I have . . . ears.

Teach "boy," "girl," "arms," "legs," "hands," "feet," using "I have," and orally "How many." Pupils read, filling blanks. Count backward by 1's and 2's from 6, using objects.

arms legs hands feet

How many feet have you?

I have.....feet.

How many eyes have you?

How many arms have you?

How many hands has John?

John has.....hands.

How many ears has John?

How many feet has John?

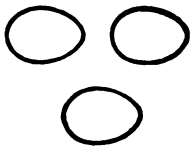
How many feet have John and I?

John and I have.....feet

How many legs have John and I?

How many eyes have John and I?

Teach "How many," "you," and "John." Pupils must answer orally or in writing in complete sentences. Use orally "give"; as, Give me four balls, You give John three balls.



I have three eggs.
I give you one egg.
Now I have . . . eggs.

I have three caps.
I give John two caps.
Now I have . . . cap.

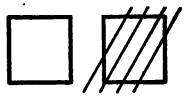
Three eggs ○○○ less one egg ○○ are ..... eggs.

Three caps ▭▭▭ less two caps ▭ are ..... cap.

Three fans ⌒⌒⌒ less one fan ⌒ are ..... fans.

Teach "now," "give," "less," and "to." Have much drill in making complete statements as above. Counting backward from 6, using "less." Pupils should actually "have" and "give" objects.

Two jars less one jar are . . . jar.

Two squares less one square  are . . . square.

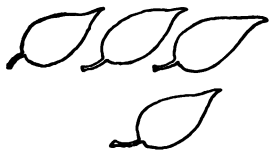
How many little cups are two little cups less one little cup?

How many caps are three caps less one cap?

How many hands are three hands less one hand?

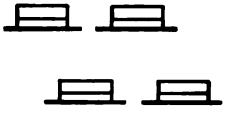
How many hands are three hands and one hand?

How many boys are one boy and one boy and one boy?



I have four leaves.
I give you one leaf.
Now I have . . .
leaves.

John has four hats.
He gives me two hats.
Now he has . . . hats.

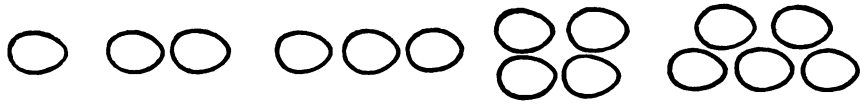


Four leaves less three
leaves are ..... leaf.

Four kites less one
kite are ..... kites.

Four eggs less two eggs
are ..... eggs.

The pupil must have the objects, give them, and state the result in three complete sentences as above. Teach "leaf," "leaves," and "kite." See note on page 18.



Two hats less two hats are no hats.

Three fans less three fans are.....fans.

Four eggs less four eggs are.....eggs.

Four boys less four boys are.....boys.

Three girls less three girls are.....girls.

Two leaves less two leaves are.....leaves.

Continue counting and blackboard drill with "less." Counting backward from 6.

One leaf and one leaf and one leaf are . . . leaves.

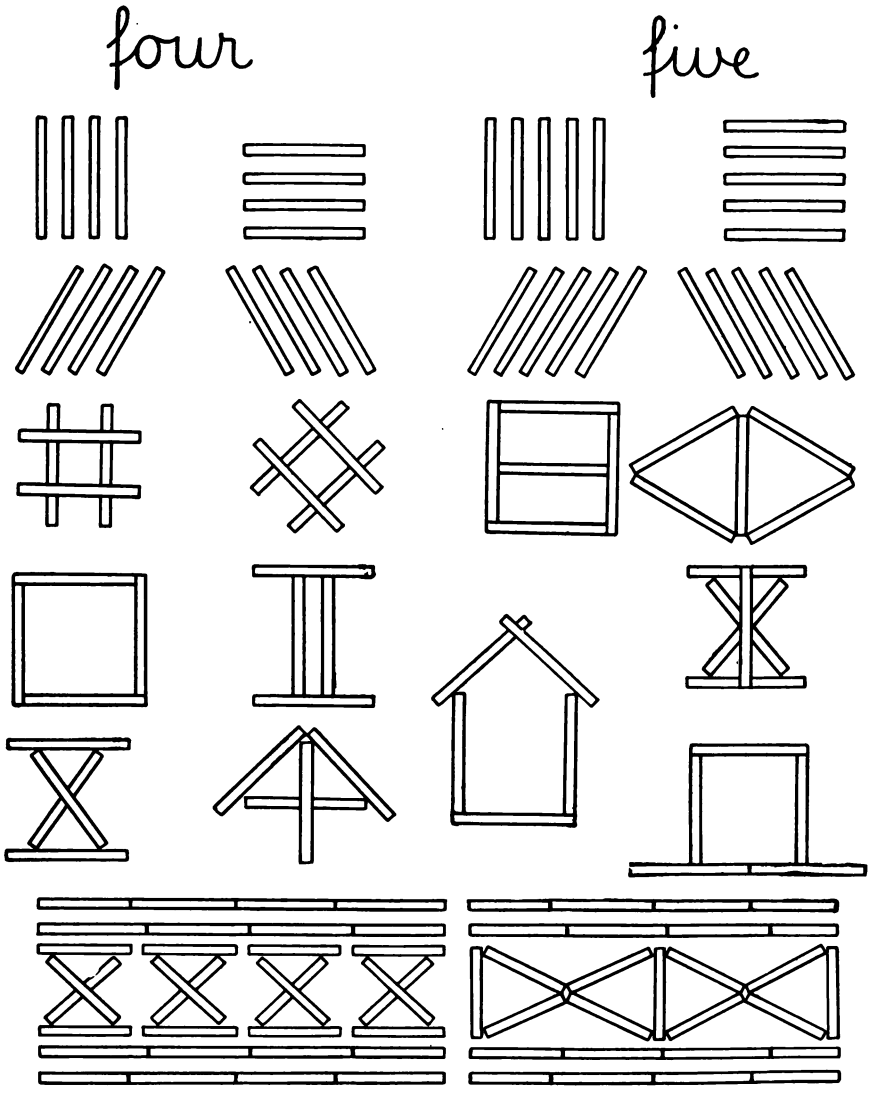
One boy and two boys and one boy are . . . boys.

Two tops and . . . tops are four tops.

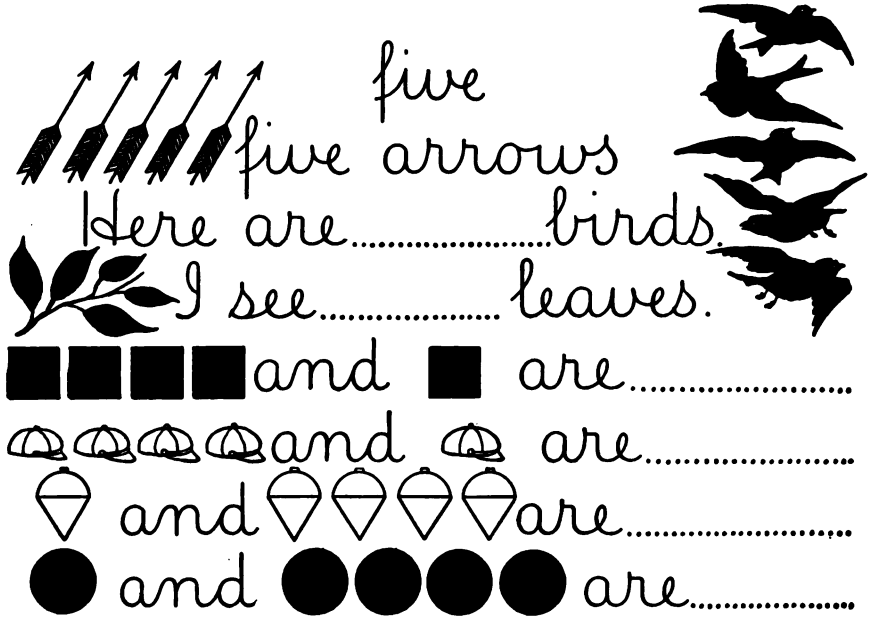
One hat and . . . hats are four hats.

One and one are two.

Pupils read, filling blanks. Use simple problems having three numbers. Use orally abstract problems involving numbers under five and have pupils sometimes illustrate by showing objects or by drawing, etc.



Sticklaying. Use as busy work. Pupils may often copy, or invent new forms. See page 5.



Four arrows and one arrow are . . . arrows.
Four birds and one bird are . . . birds.
One leaf and four leaves are . . . leaves.
One slate and four slates are . . . slates.
Four pencils and one pencil
are . . . pencils.
Four kites and . . . kite are five kites.
How many girls are four girls and one girl?

Teach the word "five." Drill orally; as, "bring," "get," "find," "show," and "draw" five. Teach orally, "One and one are two," etc.

Two and one are three.

Three caps less one cap are . . . caps.

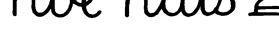
Three balls less two balls are . . . ball.

Three and one are four.

Four hands less one hand are . . . hands.

Four eyes less three eyes are . . . eye.

Four and one are five.

Five hats less one hat  are..... hats.

Five slates less one slate are..... slates.

Five pencils less four pencils are..... pencil.

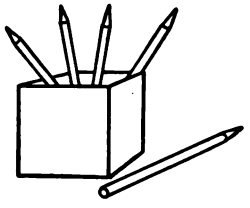
Five pins less four pins are..... pin.

Five slates less four slates are . . . slate.

Five pins less one pin are . . . pins.

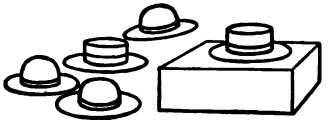
Review number facts with and without objects. Use oral problems as on page 27. Teach number names to 20 or more and apply to objects.

I see . . . pencils. . . . pencils are in the box and . . . pencil is not in the box.



Here is . . . hat on the box and . . . hats not on the box. I see . . . hats.

Four pencils and one pencil are . . . pencils.



One hat and four hats are . . . hats.

Five pencils less one pencil are . . . pencils.

Five hats less four hats are . . . hat.

One two three four five
One and one are two.
Two and one are three.
Three and one are four.
Four and one are five.
One two three four five

Teach "box," and "on." Pupils must learn the script.

Two and one are.....
Three and one are.....
Four and one are.....

John has three balls. I give him two balls.
How many balls has John now?

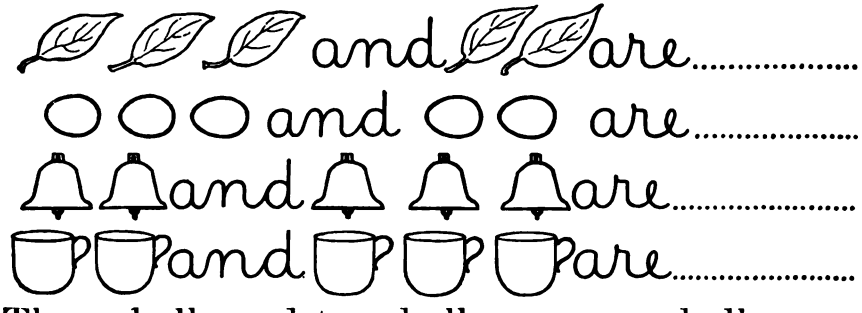
John now has.....balls.

I have two pins. John gives me three pins.
How many pins have I now?

I now have.....pins.

John has two kites, and I give him one kite.
How many kites has John now?
John has four slates, and I give him one slate.
How many slates has John now?
I have two pencils, and John gives me two pencils. How many pencils have I now?
I have one cap, and you give me four caps.
How many caps have I now?
Draw five leaves. Draw five caps.

Pupils read, giving complete answers orally and, if possible, in writing. Review by reading page 17.



Three balls and two balls are . . . balls.
Two balls and three balls are . . . balls.
Two jars and three jars are . . . jars.
Three slates and two slates are . . . slates.
How many feet are two feet and three feet?
Three stars and . . . stars are five stars.
Two flags and . . . flags are five flags.
Three and two are five.
Two and three are five.

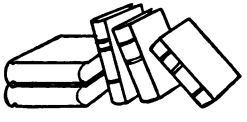
Continue counting by 2's to 10, or more. Teach three and two are five. Give pupils clay for modeling balls, jars, etc., to illustrate number. Count backward from 6, by 1's and 2's, using objects.

Two boys less one boy are . . . boy.
Two pencils less one pencil are . . . pencil.
Two less one are one.
Three pens less one pen are . . . pens.
Three slates less one slate are . . . slates.
Three less one are two.
Four books less one book are . . . books.
Four pins less one pin are . . . pins.
Four leaves less one leaf are . . . leaves.
Four less one are three.
Five kites less one kite are . . . kites.
Five feet less one foot are . . . feet.
Five eggs less one egg are . . . eggs.
Five less one are four.

Five four three two one
Five less one are.....
Four less one are.....
Three less one are.....
Five four three two one

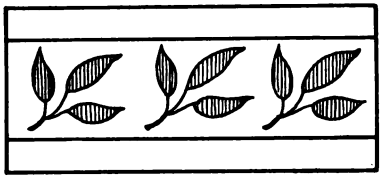
Pupils read and complete the problems. Make drawings to illustrate the script. Learn and copy the script.

Three fans and two fans are..... fans.
Five fans less two
fans are..... fans.
Five pens less three
pens are..... pens.
Five pens less two pens are..... pens.
Five fans less three fans are..... fans.



Here are . . . books.
Two books and three books are . . . books.
Five books less three books are . . . books.
Five books less two books are . . . books.
Five pigs less three pigs are . . . pigs.
Five hands less two hands are . . . hands.
Five hats less two hats are . . . hats.
Five girls less . . . girls are two girls.
Five birds less . . . birds are three birds.
Five less two are three.

Review by reading pages 18, 20, and 25. Teach the word "books." Use at first the real objects, then the names of familiar objects, and then the abstract problems; as, five less two.



Two and one are.....

One and one are.....

One and three are.....

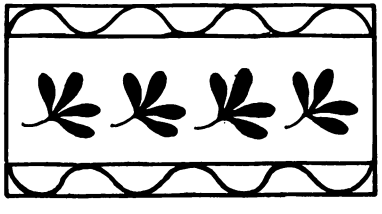
Four and one are.....

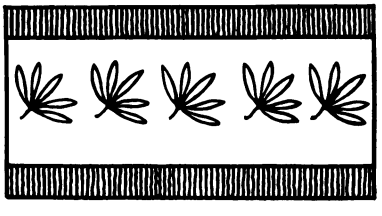
Five less two are.....

Four less three are.....

Two and three are.....

Three less two are.....





Pupils complete problems orally, and then copy or illustrate by laying sticks, circles, squares, or by drawings. Make drawings to show numbers.

Two ..... and one ..... are .....

One ..... and three ..... are .....

Three ..... less two ..... are .....

Four ..... and one ..... are .....

Two ..... and three ..... are .....

One ..... and four ..... are .....

Five ..... less three ..... are .....

Five ..... less four ..... are .....

Four ..... less three ..... are .....

One ..... and one ..... are .....

Two ..... and two ..... are .....

Four ..... less two ..... are .....

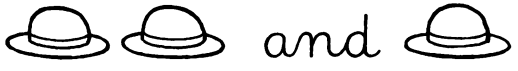
Five ..... less two ..... are .....

Five ..... less five ..... are .....

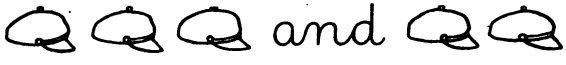
Pupils should read, filling in blanks with names of objects, then copy, using names of objects, or read and copy without naming objects, or draw objects or lay sticks to illustrate the problems. Drill on knowing groups of two, three, or four objects without counting.

one two three four five

1 2 3 4 5

 and are.....

2 hats and 1 hat are.....hats.

 and are.....

3 caps less 2 caps are.....cap.

3 hats less 2 hats are.....hat.

and are.....

4 pins and 1 pin are.....pins.

4 books and 1 book are.....books.

5 books less 4 books are.....book.

1 2 3 4 5

one two three four five

Teach figures, showing or drawing groups of objects, and pupils writing the figure. Write figures for problems on pages 11 and 12, 15 and 16.

1 2 3 4 5 6

one two three four five six.

six circles

squares

Here are ..... pens.
and are .....

and are .....

Five leaves and one leaf are ..... leaves.

5 circles and 1 circle are ..... circles.

5 books and 1 book are ..... books.

One pen and five pens are ..... pens.

1 pencil and 5 pencils are ..... pencils.

1 flag and 5 flags are ..... flags.

Draw 6 circles.

Teach "6," "six," "squares," and "circles." Ask pupils to find, get, bring, or draw six slates, etc. Counting by 1's to 20, or more. Teach pupils to count the pages of the book, using the figures at the tops of the pages. Teach number names backward from ten.

1 2 3 4 5

1 ball and 2 balls are . . . balls.
2 jars less 1 jar are . . . jar.
How many jars are 3 jars and 2 jars?
How many balls are 5 balls less 3 balls?
How many hats are 4 hats less 2 hats?
2 hands and . . . hands are 4 hands.
2 bells less . . . bells are no bells.
5 pencils less . . . pencils are 2 pencils.

1 and 2 are . . .
3 and 2 are . . .
4 less 2 are . . .
5 less 4 are . . .
4 less 3 are . . .
1 and 4 are . . .

Write pages 31 and 32, using figures. Counting by 1's to 20, or more. Have quick oral drill with number facts to and including 5. Have clay-modeling of balls and jars.

Here are . . . little girls.
1 girl and 5 girls are . . . girls.
5 girls and 1 girl are . . . girls.

6 cups less 1 cup are . . . cups.
6 arrows less 5 arrows are . . . arrow.
Six girls less five girls are . . . girl.
How many flags are 6 flags less 1 flag?
How many books are 6 books less 5 books?

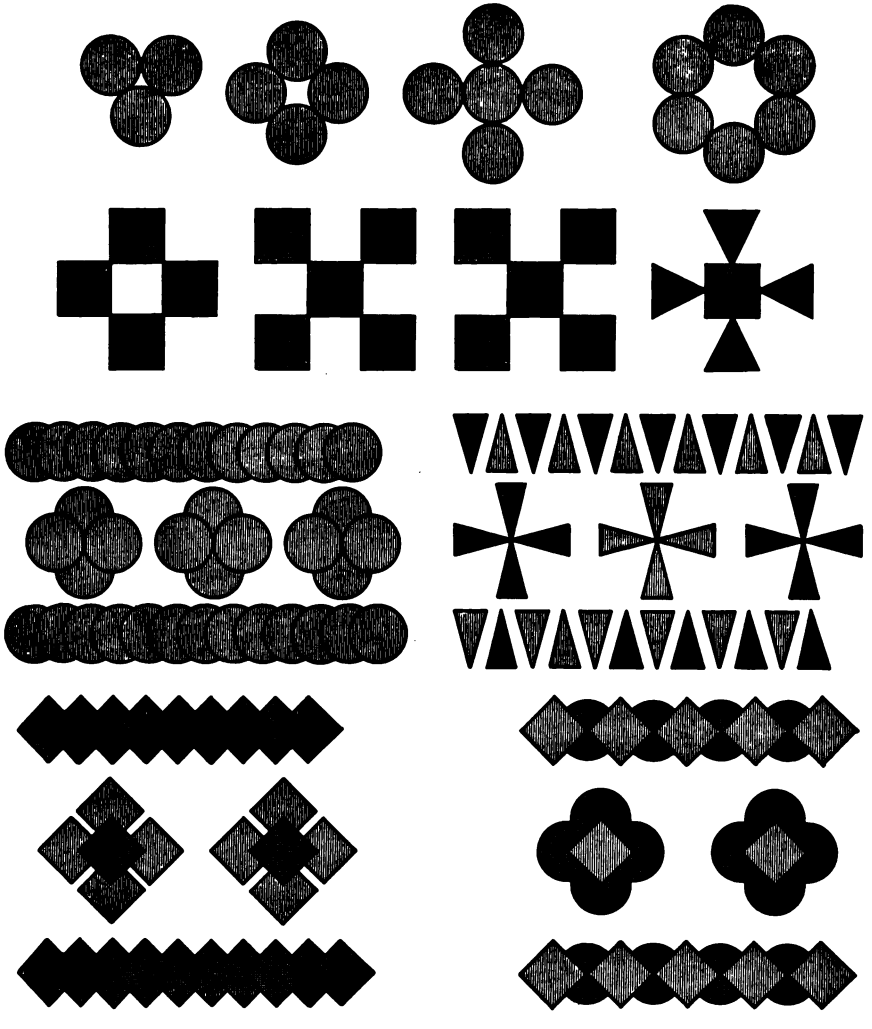
How many dogs are 5 dogs and 1 dog?
5 and 1 are . . .
6 less 1 are . . .
6 less 5 are . . .

2 and 1 are . . .
3 and 2 are . . .
1 and 4 are . . .

2 and 1 are	3 and 2 are	1 and 4 are
4	5	1	2
1	1	3	3
—	—	—	—

3 and 2 and 1 are	2 and 1 and 2 are	1 and 3 and 1 are	3 and 1 and 2 are
1	2	1	3
2	1	4	1
1	2	1	2
—	—	—	—

Teach pupils vertical addition. Learn first to read down with words, then without, supplying them orally. Pupils may copy and write in the sums. Counting backward from 10 by 1's, the pupil taking one object at each count.



Cut from paper, bark, or leaves, many circles, squares, and triangles. Pupils should lay them on slates or paper as indicated, or they may be pasted on paper. Pupils should invent other forms. Use colors if possible.

1 2 3 4 5

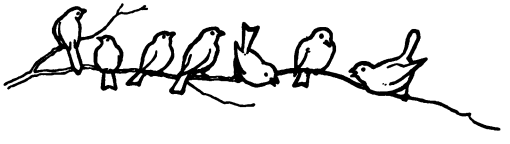
one two three four five

6 7 8 9 10

six seven eight nine ten

6 six

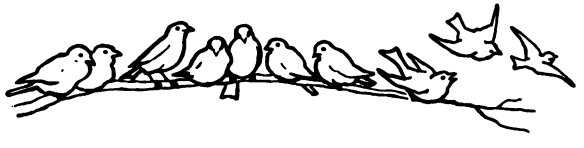
7 seven



8 eight

9 nine

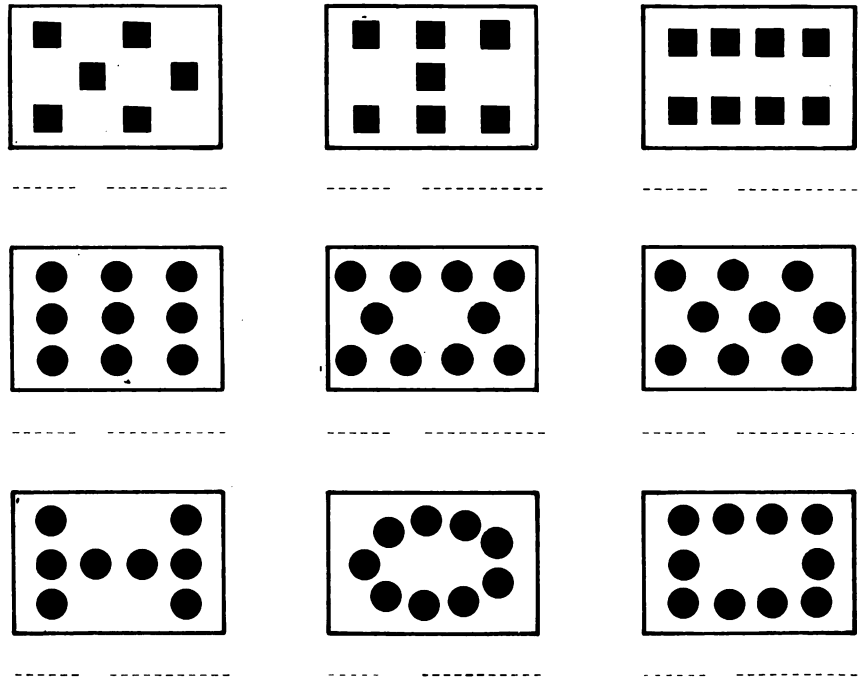
10 ten



Teach figures and words to ten. Allow pupils to continue counting by 1's. Count backward from 10 by 1's. Pupils copy figures and words.

six seven eight nine ten

6 7 8 9 10

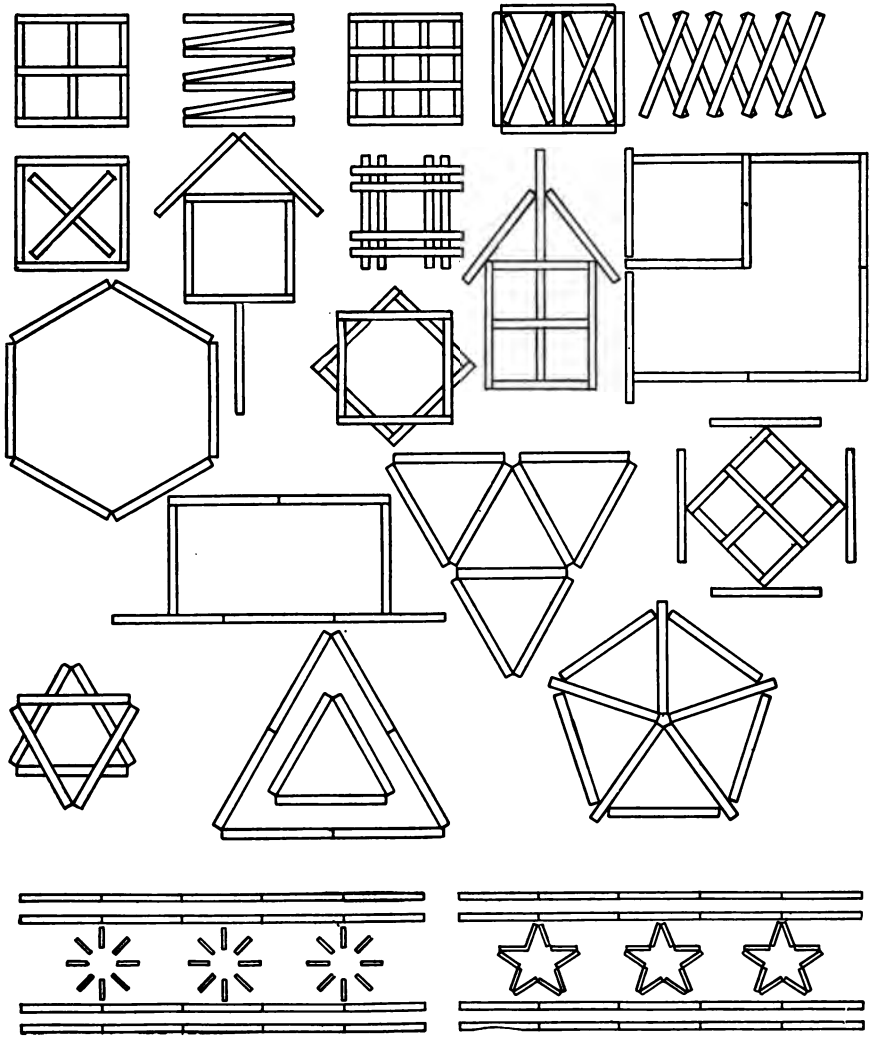


1 2 3 4 5

6 7 8 9 10

Drill on figures to 10. Have pupils copy this page, counting, and writing on the dotted lines the figure and the word showing the number of dots. Show objects and drawings, the pupils telling the numbers and writing the figures.

6 7 8 9 10



1 2 3 4 5
I take a frog alive.
6 7 8 9 10
I let it go again.

One, two, how are you?
Three, four, shut the door.
Five, six, find three sticks.
Seven, eight, don't be late.
Nine, ten, come again.

After 1 comes 2.
After 2 comes 3.
After 3 comes 4.
After 4 comes 5.
After 5 comes 6.
After 6 comes 7.
After 7 comes 8.
After 8 comes 9.
After 9 comes 10.

To be taught orally and learned by heart. Counting by 1's to 10 or more. Counting backward by 1's from 10.

6 caps and 1 cap are . . . caps.
6 hats and 1 hat are . . . hats.
6 and 1 are . . .

7 tops and 1 top are . . . tops.
7 kites and 1 kite are . . . kites.
7 and 1 are . . .

8 circles and 1 circle are . . . circles.
8 squares and 1 square are . . . squares.
8 and 1 are . . .

9 jars and 1 jar are . . . jars.
9 fans and 1 fan are . . .
9 and 1 are . . .

Pupils read, fill blanks orally, copy drawings. Use many other oral problems.

Six books and one book are . . . books.
Seven pens and one pen are . . . pens.
Eight slates and one slate are . . . slates.
Nine pencils and one pencil are . . . pencils.

6 bees and 1 bee are . . . bees.
7 birds and 1 bird are . . . birds.
8 rats and 1 rat are . . . rats.
9 pigs and 1 pig are . . . pigs.

1 and 1 are.....
2 and 1 are.....
3 and 1 are.....
4 + 1 = ...
5 + 1 = ...
6 + 1 = ...
7 + 1 = ...
8 + 1 = ...
9 + 1 = ...

Teach "+" and "=" as meaning "and" and "are." Complete, copy, and learn the script. Continue counting backward from 10, using objects, and "less," removing one object at each count.

10 stars less 1 star are . . . stars.
10 flags less 1 flag are . . . flags.
10 less 1 are . . .

9 eggs less 1 egg are . . . eggs.
9 birds less 1 bird are . . . birds.
9 less 1 are . . .

8 leaves less 1 leaf are . . . leaves.
8 girls less 1 girl are . . . girls.
8 less 1 are . . .

7 fans less 1 fan are . . . fans.
7 hands less 1 hand are . . . hands.
7 less 1 are . . .

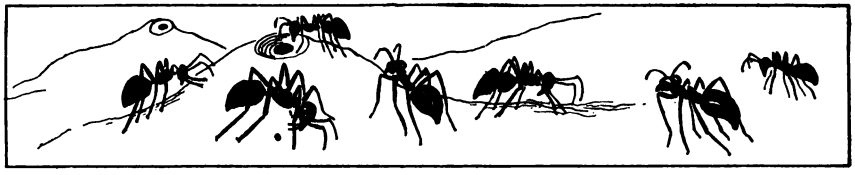
Counting backward by subtracting 1's; as, "10 pens less 1 pen are 9 pens," "9 pens less 1 pen are 8 pens," etc., the pupil taking away one object at each count. Pupils read and fill blanks. Copy drawings.

10 squares less 1 square are . . . squares.
9 boys less 1 boy are . . . boys.
8 hats less 1 hat are . . . hats.
7 caps less 1 cap are . . . caps.
6 fans less 1 fan are . . . fans.
5 tops less 1 top are . . . tops.
4 kites less 1 kite are . . . kites.

10 less 1 are .....
9 — 1 = ...
8 — 1 = ...
7 — 1 = ...
6 — 1 = ...
5 — 1 = ...
4 — 1 = ...
3 — 1 = ...

10 9 8 7 6 5 4 3 2 1

Read, filling blanks. Pupils copy, complete, and learn the script. Write figures to 10 forward and backward. Count pages of the book and objects to 20 or more. Teach "—" as "less."



Here are..... black ants.

6 ants and 1 ant are..... ants.

1 ant and 6 ants are..... ants.

7 ants less 1 ant are..... ants.

7 ants less 6 ants are..... ant.

How many eggs are 6 eggs and 1 egg?

How many cups are 1 cup and 6 cups?

How many balls are 7 balls less 6 balls?

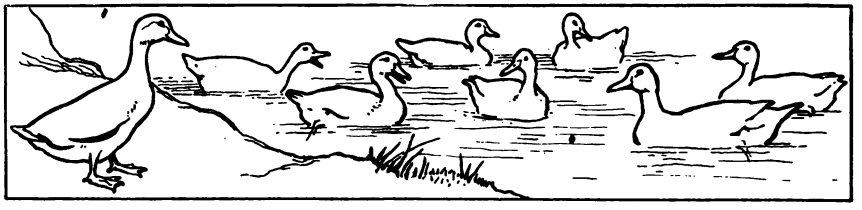
1 kite and . . . kites are 7 kites.

7 jars less . . . jars are 6 jars.

Frank has 7 tops in his box. I take 1 top.
How many tops has Frank now in his box?

I have 7 pens on my slate.
Maria takes 6 of my pens.
I now have . . . pen on my slate.

Teach "ants" and with objects and drawings "6 + 1," "1 + 6," "7 − 6," "7 − 1." Use oral problems. A part or all of the script may be copied.



Here I see . . . birds.
There are . . . birds in the water and . . .
bird on the land.

1 bird and 7 birds are ..... birds.
8 birds less 7 birds are ..... bird.
8 ants less 1 ant are ..... ants.
8 stars less 7 stars are ..... star.

8 balls less . . . balls are 1 ball.
8 bees less . . . bees are 7 bees.
7 chickens are 8 chickens less . . . chicken.

Frank has 8 bananas in his hand.
He eats one banana.
Frank now has . . . bananas in his hand.

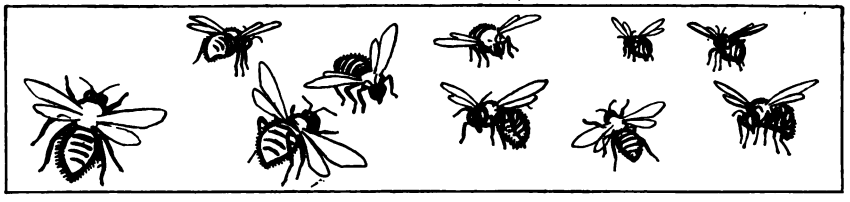
7 and 1 are . . . 8 less 1 are . . .
1 + 7 = . . . 8 − 7 = . . .

1 nut and 8 nuts are ..... nuts.
9 nuts less 1 nut are ..... nuts.
9 nuts less 8 nuts are ..... nut.
8 ants and 1 ant are ..... ants.

How many birds are 1 bird and 8 birds?
How many boys are 8 boys and 1 boy?
How many jars are 9 jars less 1 jar?
How many kites are 9 kites less 8 kites?
1 ball and . . . balls are 9 balls.
9 hands less . . . hands are 1 hand.

I have 9 books. Maria takes 8 books.
I now have . . . book.

1 and 8 are . . .	9 less 1 are . . .
8 + 1 = . . .	9 − 8 = . . .



9 bees and 1 bee are ..... bees.
10 bees less 1 bee are ..... bees.
1 bee and 9 bees are ..... bees.
10 bees less 9 bees are ..... bee.

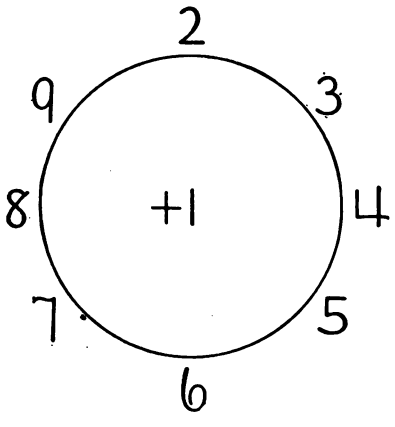
How many bees are 9 bees and 1 bee?
How many eyes are 10 eyes less 1 eye?
How many feet are 10 feet less 9 feet?
10 bells less . . . bell are 9 bells.

10 bees are on my hat. 9 bees fly away.
How many bees are now on my hat?

Frank sees 10 birds. 1 bird flies away.
Frank can now see . . . birds.

I have 1 kite. John gives me 9 kites.
I now have . . . kites.

9 and 1 are . . . 10 less 1 are . . .
1 + 9 = . . . 10 − 9 = . . .



2 and 1 are.....

3 + 1 = ...

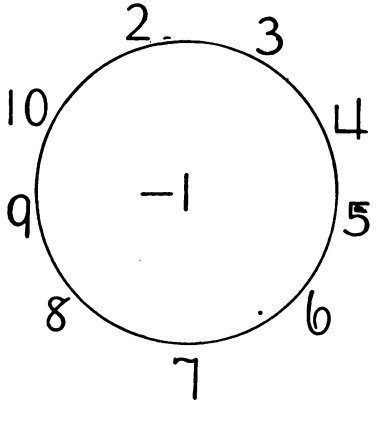
.....+ 1 = ...

.....+ 1 = ...

.....+ 1 = ...

.....+ 1 = ...

.....+ 1 = ...



2 less 1 are.....

3 − 1 = ...

.....− 1 = ...

.....− 1 = ...

.....− 1 = ...

.....− 1 = ...

Copy circle on blackboard. Teach pupils to use orally, as "2 and 1," "3 and 1," etc., or "2 less 1," "3 less 1." Pupils copy, filling blanks. Counting by 2's to 10, or more, as "1 and 2 are 3," "3 and 2 are 5," "5 and 2 are 7," etc., "2 and 2," "4 and 2," etc.

Two boys less two boys are no boys.
Three hats less three hats are . . . hats.
Four girls less four girls are . . . girls.
5 circles less 5 circles are 0 circles.
6 boxes less 6 boxes are . . . boxes.
7 squares less 7 squares are . . . squares.
How many pens are 8 pens less 8 pens?
How many pins are 9 pins less 9 pins?
How many eggs are 10 eggs less 10 eggs?
8 dogs less . . . dogs are 0 dogs.
Louisa has 10 little fishes.
She gives 10 little fishes to Maria.
Louisa now has . . . little fishes.

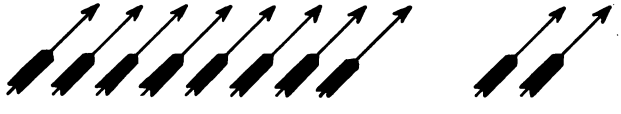
2 less 2 are . . .	7 − 7 = . . .
3 − 3 = . . .	8 − 8 = . . .
4 − 4 = . . .	9 − 9 = . . .
5 − 5 = . . .	10 − 10 = . . .
6 − 6 = . . .	1 − 1 = . . .

Teach "0" as being the figure for "no" or "nothing." Pupils read "2 less 2 are nothing," or "naught." Use oral problems. Counting by 2's to 10 or more; as, 2, 4, 6, 8, 10, and 1, 3, 5, 7, and 9. Use objects as in counting 1's.

5 cups and 2 cups are . . . cups.
5 girls and 2 girls are . . . girls.
5 and 2 are . . .

6 pens and 2 pens are . . . pens.
6 pencils and 2 pencils are . . . pencils.
6 and 2 are . . .

7 squares and 2 squares are . . . squares.
7 fans and 2 fans are . . . fans.
7 and 2 are . . .



8 arrows and 2 arrows are . . . arrows.
8 bows and 2 bows are . . . bows.
8 and 2 are . . .

Count by 2's to 10, or more, using objects, drawings, and oral problems. Pupils read the page, filling blanks.

2 4 6 8 10

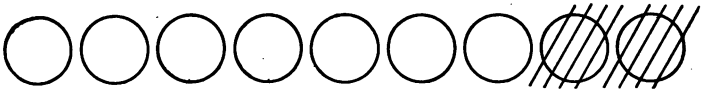
How many books are 3 books and 2 books?
How many bells are 4 bells and 2 bells?
5 hats and 2 hats are . . . hats.
6 slates and 2 slates are . . . slates.
7 pigs and 2 pigs are . . . pigs.
How many balls are 8 balls and 2 balls?
6 hands and . . . hands are 8 hands.
8 hats and . . . hats are 10 hats.
7 feet and . . . feet are 9 feet.

2 and 2 are .....
3 + 2 = ...
4 + 2 = ...
5 + 2 = ...
6 + 2 = ...
7 + 2 = ...
8 + 2 = ...

1 3 5 7 9

Have oral problems in 2's. Copy and learn script.

10 tops less 2 tops are . . . tops.
10 girls less 2 girls are . . . girls.
10 less 2 are . . .



9 circles less 2 circles are . . . circles.
9 squares less 2 squares are . . . squares.
9 less 2 are . . .

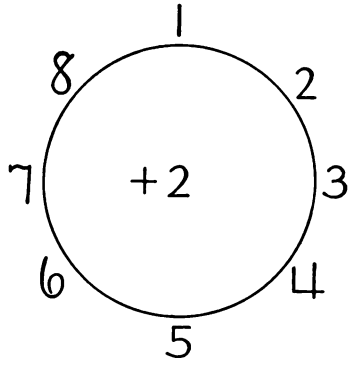
8 caps less 2 caps are . . . caps.
8 boys less 2 boys are . . . boys.
8 less 2 are . . .

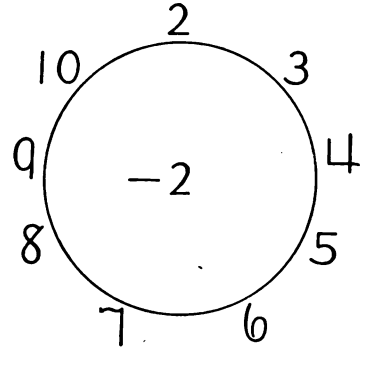
7 hats less 2 hats are . . . hats.
7 fans less 2 fans are . . . fans.
7 less 2 are . . .

Review by reading pages 45 and 46. Count backward from 10, by 2's, at first in the series, 10, 8, 6, 4, 2, then 9, 7, 5, 3, as in adding, pupils moving the objects, using "less" and stating the result at each count, as in 1's. Then use oral problems and the series as above. Pupils read, copy drawings, and make new problems.

How many pens are 6 pens less 2 pens?
How many slates are 7 slates less 2 slates?
How many boys are 7 boys less 2 boys?
How many books are 8 books less 2 books?
8 pencils less 2 pencils are . . . pencils.
9 caps less 2 caps are . . . caps.
How many hats are 9 hats less 2 hats?
10 slates less 2 slates are . . . slates.
How many books are 10 books less 2 books?
9 girls less 2 girls are . . . girls.

1 and 2 are . . .	2 less 2 are . . .
3 + 2 = . . .	4 − 2 = . . .
5 + 2 = . . .	6 − 2 = . . .



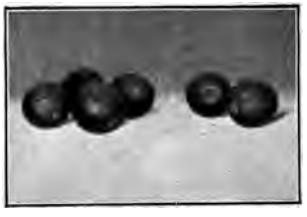


Review 2's. Pupils copy and learn tables of 2's. Use circles as on page 51.

I have 4 oranges.

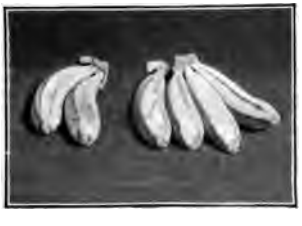
You give me 2 oranges.

I now have . . . oranges.



Two oranges and four oranges are.....oranges.

Six bananas less four bananas are.....bananas.



2 bananas and 4 bananas are . . . bananas.

6 bananas less 2 bananas are . . . bananas.

John has four bananas and I give him two bananas. How many bananas has John now?

Maria has six oranges. She gives you two. How many oranges has Maria now?

Teach "2 + 4," "4 + 2," "6 − 2," "6 − 4." Teach "oranges," and "bananas." Give many oral problems.

Here are . . . big frogs on the land and . . . little frogs in the water.

5 little frogs and 2 little frogs are . . . little frogs.

2 big frogs and 5 big frogs are . . . big frogs.

7 frogs less 5 frogs are . . . frogs.

7 boys less 2 boys are . . . boys.

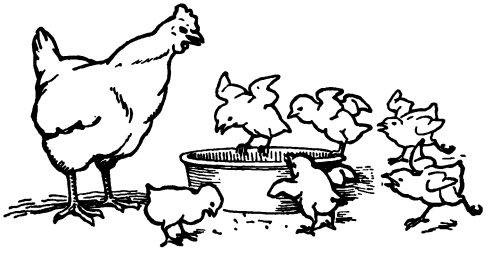
I give you 5 oranges. John gives you 2 oranges. How many oranges have you now?

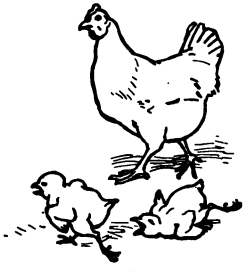
John has 7 bananas. I eat 5 of his bananas. How many bananas has John now?

Maria has 7 oranges in her hands.
John eats 2 of her oranges.
Maria now has . . . oranges in her hands.

5 and 2 are . . . 7 less 5 are . . .

Teach "frog" and "water." Pupils may draw or model to illustrate, $5 + 2$, $7 - 5$. Allow each pupil to go as far as he can.





Here I see ..... hens and
..... little chickens.

6 little chickens and 2 little chickens are . . . little chickens.

2 hens and 6 hens are . . . hens.

8 chickens less 2 chickens are . . . chickens.

How many hens are 8 hens less 6 hens?

6 bees and 2 bees are ..... bees.

2 ants and ..... ants are 8 ants.

8 fans less ..... fans are 2 fans.

8 hens less ..... hens are 6 hens.

6 and 2 are ..... 8 less 6 are .....

2 + 6 = ... 8 — 2 = ...

Teach "hen" and "chickens." Pupils may copy script. Have oral problems using verbs; as, bring, take, run, jump, write, draw, make, walk, give, sit, stand, etc. Count the words on a page, the letters in a line, etc.

1 fish and 7 fishes are . . . fishes.

6 fishes and 2 fishes are . . . fishes.

John puts 6 fishes in the water.
Maria puts 2 fishes in the water.
How many fishes are now in the water?

How many ants are 8 ants less 6 ants?

Louisa has 8 oranges in her box.
The ants eat 2 oranges.

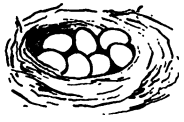
Louisa now has . . . oranges in her box.

8 bees less 8 bees are . . . bees.
7 bees less . . . bees are 0 bees.

Frank has 8 bees in his hand.
8 of his bees fly away.
How many bees has Frank now?

How many eyes have John and Maria and Louisa and Frank?

Teach "fishes," "Frank." Count hands, feet, by 2's, etc. Drawings. Count pages of the book.



7 eggs and 2 eggs are . . . eggs.
9 eggs less 2 eggs are . . . eggs.
9 eggs less 7 eggs are . . . eggs.
2 nests and 7 nests are . . . nests.

Here is a man on his horse.

2 horses and 7 horses are..... horses.

9 men less 2 men are..... men.

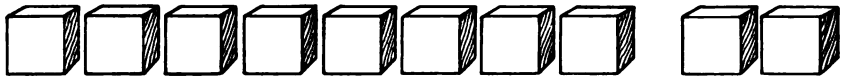
9 men less 7 men are..... men.

John has 7 horses. I give him 2 horses.
How many horses has John now?

I see 9 men. 7 men walk away.
I can now see . . . men.

7 and 2 are . . .	9 less 2 are . . .
2 + 7 = . . .	9 − 7 = . . .

Teach "man," "men," "horse," and "horses." Use also other objects, drawings, and oral problems.



8 cubes and 2 cubes are.....cubes.
10 cubes less 8 cubes are.....cubes.

2 cubes and 8 cubes are . . . cubes.
How many cubes are 10 cubes less 2 cubes?
How many birds are 8 birds and 2 birds?
How many horses are 2 horses and 8 horses?

How many men are 10 men less 2 men?
10 fishes less 8 fishes are . . . fishes.
10 hens less . . . hens are 8 hens.

I have 10 cubes in my hand.
I give 2 cubes to you.
How many cubes have I now in my hand?

10 birds are in a nest. 8 birds fly away.
There are now . . . birds in the nest.

8 and 2 are . . .	10 less 2 are . . .
2 + 8 = . . .	10 − 8 = . . .

Teach "8 + 2," etc. Teach "cube." Clay modeling of cubes. **Pupils** read, and copy script. Read pages 49 and 50.

8 + 2 =	7 + 2 =	5 + 2 =	6 + 2 =	3 + 2 =	4 + 2 =
9 + 1 =	8 + 1 =	2 + 8 =	1 + 7 =	7 + 2 =	5 + 1 =
4 − 2 =	5 − 2 =	6 − 2 =	7 − 2 =	10 − 2 =	8 − 2 =
9 − 2 =	2 − 2 =	10 − 9 =	8 − 8 =	9 − 8 =	10 − 8 =

8 − 7 = . . . 7 − 6 = . . .

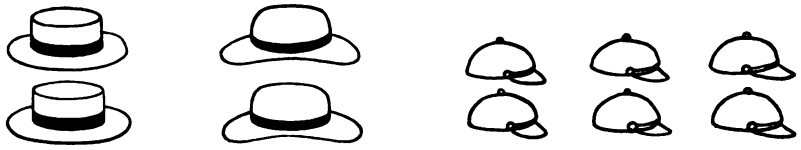
6 − 5 = . . . 10 − 10 = . . .

Draw seven fishes less two fishes.

How many boys are 2 boys, 1 boy, and 2 boys?

I have 6 balls. I give 2 balls to you and 1 ball to John. I now have . . . balls.

Pupils read and give answers orally, or copy abstract problems. Review 2's. Read pages 53 to 56.



2 hats and 2 hats are . . . hats.
2 tops and 2 tops are . . . tops.
2 feet and 2 feet are . . . feet.
How many twos of hats in 4 hats?
How many twos of tops in 4 tops?
How many twos of hands in 4 hands?
How many 2's in 4?
2 caps and 2 caps and 2 caps are . . . caps.
2 ants and 2 ants and 2 ants are . . . ants.
2 pens and 2 pens and 2 pens are . . . pens.
How many 2's of hats in 6 hats?
How many 2's of ants in 6 ants?
How many legs have 3 boys?
How many wings have 3 birds?
How many 2's in 6?

Two 2's are . . . In 4 there are . . . 2's.
Three 2's are . . . In 6 there are . . . 2's.

Count to 20 or more by 2's; as, 2, 4, 6, 8, 10, etc. Teach 2 2's and 3 2's. Use oral problems.

Two 2's are.....

Three 2's are.....

2 boys have..... ears.

2 birds have..... wings.

3 cats have..... eyes.

3 girls have..... hands.

4 caps are..... 2's of caps

6 hats are..... 2's of hats.

3 2's of pens are..... pens.

2 2's of slates are..... slates.

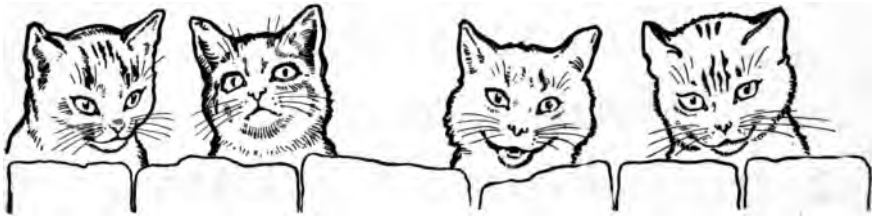
In 6 there are..... 2's.

John has 2 boxes. There are 2 balls in each box. How many balls has John?

Frank has 3 hats. He has 2 oranges in each hat. Frank has . . . oranges in his hats.

Draw three 2's of kites.

Pupils may copy the script and make new oral problems.



How many cats can you see?
How many ears can you see?
How many 2's of ears can you see?
How many eyes have 4 cats?
How many 2's of eyes have 4 cats?
How many 2's of eyes are 8 eyes?
How many 2's of ears are 8 ears?
How many 2's of boys are 8 boys?
8 boys are . . . 2's of boys.
8 hats are . . . 2's of hats.
4 balls are . . . 2's of balls.
6 pencils are . . . 2's of pencils.
8 birds are . . . 2's of birds.

Two 2's are . . .
Three 2's are . . .
Four 2's are . . .

Teach four 2's. Count by 2's to 10.

2 2's are .....

3 2's are .....

4 2's are .....

Four 2's of kites are .....kites.

4 2's of stars are .....stars.

4 2's of jars are .....jars.

4 dogs have .....eyes.

6 bells are .....2's of bells.

8 pigs are .....2's of pigs.

8 ants are .....2's of ants.

8 eggs are .....2's of eggs.

John has 4 caps.

There are 2 balls in each cap.

John has . . . balls in his caps.

How many wings have 4 birds?

I have 8 blue pencils.

How many 2's of blue pencils have I?

Here are . . . cubes.
How many 2's of cubes in 10 cubes?
Draw 10 circles.
How many 2's of circles in 10 circles?
Draw 5 2's of arrows.
5 2's of arrows are . . . arrows.
5 2's of circles are . . . circles.
5 2's of cubes are . . . cubes.
How many hands have 5 girls?
How many ears have 5 horses?

5 2's of cubes are ..... cubes.
5 2's of pins are ..... pins.
10 cubes are ..... 2's of cubes.
10 books are ..... 2's of books.
5 boys have ..... eyes.
5 2's are .....

Teach five 2's. Have clay modeling of cubes and other similar objects.

Two 2's are .....

Three 2's are .....

Four 2's are .....

Five 2's are .....

5 2's of girls are .....girls.

5 2's of bells are .....bells.

10 leaves are .....2's of leaves.

10 eyes are .....2's of eyes.

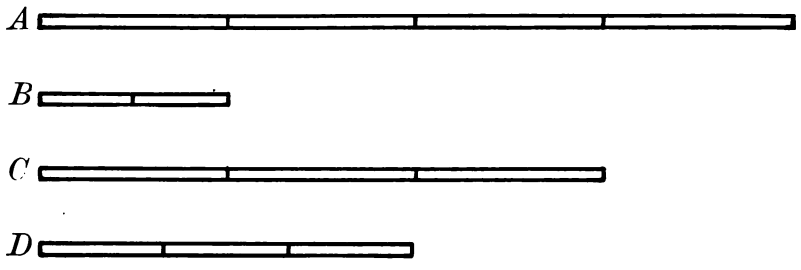
How many hands have 4 boys?
How many boys have 10 hands?

There are 2 trees and 2 birds in each tree.
How many birds are in the trees?

I have 4 hats and 2 bananas in each hat.
How many bananas have I in my hats?

There are 5 boxes and 2 balls in each box.
There are . . . balls in the boxes.

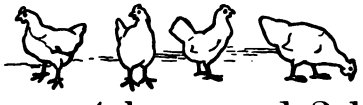
Review 2's. Read pages 54, 56, and 63. Pupils may copy script. Review counting by 2's forward and backward to 20. Add 2's orally to numbers to 20 or more.



Get 4 sticks as long as *A*.
Get 5 sticks as long as *C*.
Get 3 sticks as long as *B*.
Get 10 sticks as long as *D*.
Which line is longer than *C*?
Which lines are longer than *D*?
Which line is shorter than *D*?
Which lines are shorter than *C*?
Which is the longest line?
Which line is the shortest line?
Draw a line as long as *D*.
Draw a line longer than *C*.
Draw a line shorter than *B*.

Teach first with objects and drawings, "long," "short," "longer," "shorter," "longest," and "shortest." Get sticks or straws and cut many as long as each line and give several of each length to each pupil. Teach to find all of the same length, or as long as *A*, *B*, *C*, or *D*, and to draw or to make as long as, etc. Repeat the exercises until the terms are familiar and the pupils can easily compare, draw, and make. Pupils work in small groups.

3 fishes and 3 fishes are . . . fishes.
3 bees and 3 bees are . . . bees.
3 and 3 are . . .

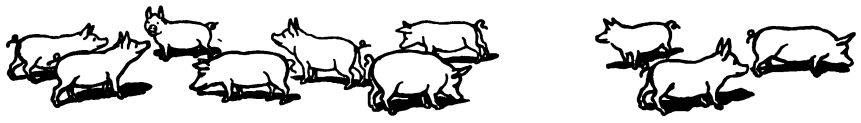


4 hens and 3 hens are . . . hens.
4 nests and 3 nests are . . . nests.
4 and 3 are . . .

5 birds and 3 birds are . . . birds.
5 eggs and 3 eggs are . . . eggs.
5 and 3 are . . .

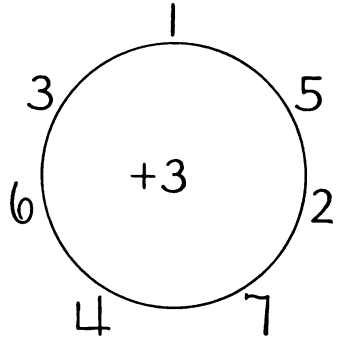
6 trees and 3 trees are . . . trees.
6 leaves and 3 leaves are . . . leaves.
6 and 3 are . . .

Review knowing of groups of objects as two's, three's, and four's without counting. Teach counting by 3's; as, 3, 6, 9; 1, 4, 7, 10. Pupils should continue counting until they know at once the result of each count. Read pages 43 and 53.



7 pigs and 3 pigs are . . . pigs.
7 dogs and 3 dogs are . . . dogs.
7 and 3 are . . .

1 top and 3 tops are . . . tops.
How many balls are 2 balls and 3 balls?
How many kites are 3 kites and 3 kites?
4 pencils and 3 pencils are . . . pencils.
5 girls and 3 girls are . . . girls.
How many boys are 6 boys and 3 boys?
How many girls are 7 girls and 3 girls?



1 and 3 are . . .
2 + 3 = . . .
3 + 3 = . . .
4 + 3 = . . .
5 + 3 = . . .
6 + 3 = . . .
7 + 3 = . . .

Have many oral problems, with and without objects. Pupils copy and learn 3's. Continue counting by adding and subtracting 3's to 10 or more.

10 pigs less 3 pigs are . . . pigs.
10 dogs less 3 dogs are . . . dogs.
10 less 3 are . . .

9 trees less 3 trees are . . . trees.
9 leaves less 3 leaves are . . . leaves.
9 less 3 are . . .

8 birds less 3 birds are . . . birds.
8 eggs less 3 birds are . . . eggs.
8 less 3 are . . .

7 chickens less 3 chickens are . . . chickens.
7 hens less 3 hens are . . . hens.
7 less 3 are . . .

6 fishes less 3 fishes are . . . fishes.
6 bees less 3 bees are . . . bees.
6 less 3 are . . .

10 oranges less 3 oranges are . . . oranges.
How many nuts are 10 nuts less 3 nuts?
9 bananas less 3 bananas are . . . bananas.
How many fishes are 9 fishes less 3 fishes?
8 slates less 3 slates are . . . slates.
How many birds are 8 birds less 3 birds?
7 pens less 3 pens are . . . pens.
6 bells less 3 bells are . . . bells.
How many birds are 5 birds less 3 birds?
How many hats are 4 hats less 3 hats?
How many kites are 3 kites less 3 kites?

10 less 3 are . . .	6 less 3 are . . .
9 − 3 = . . .	5 − 3 = . . .
8 − 3 = . . .	4 − 3 = . . .
7 − 3 = . . .	3 − 3 = . . .

Have many oral problems about objects. Pupils learn 3's. **Review** tables of 1's and 2's, pages 44 and 46, 54 and 56.

Here are . . . rats. A rat has . . . eyes, . . . ears, . . . legs, . . . feet, and . . . tail.

3 rats and 3 rats are . . . rats.

3 tails and 3 tails are . . . tails.

6 rats less 3 rats are . . . rats.

Here is a bee.

The bee has . . . wings, . . . eyes, and . . . legs.

3 legs and 3 legs are . . . legs.

6 bees less 3 bees are . . . bees.

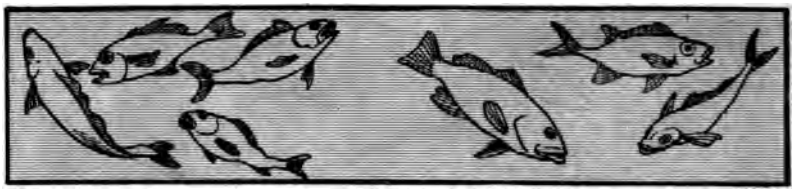
There are 6 bees on my hat. 3 bees fly away. How many bees are now on my hat?

There are 6 rats in John's box. 3 rats run away, and now John has . . . rats in his box.

Six birds are on a tree. Three birds fly away. How many birds are now on the tree?

Draw six birds. Draw six trees.

Teach "3 and 3," "rats," "bee," "There are," "fly away," and "tails." Continue counting by 3's, allowing pupils to go as far as they can.



How many fishes are here in the water?
4 fishes and 3 fishes are . . . fishes.
7 fishes less 4 fishes are . . . fishes.
7 fishes less . . . fishes are 4 fishes.
7 frogs are 4 frogs and . . . frogs.
How many bees are 7 bees less 3 bees?
How many hands are 7 hands less 6 hands?
How many flags are 5 flags and 2 flags?

Frank has 4 fishes in the water in his jar.
He puts 3 fishes in the jar.
How many fishes are now in Frank's jar?

There are 7 pins in my little black hat.
Maria takes 3 pins.
I now have . . . pins in my little black hat.

4 and 3 are . . . 7 less 3 are . . .

Teach "fishes," "takes," "puts," and "4 + 3," etc. Have oral drill and teach the new numbers before using the books. Teach pupils to count pages of the book. Counting by 1's to 50.

5 goats and 3 goats are ..... goats.

3 white goats and 5 black goats are ..... goats.

8 goats less 5 goats are ..... goats.

How many books are 5 books and 3 books?

3 bees and . . . bees are 8 bees.

How many goats are 8 goats less 3 goats?

8 bells less . . . bells are 3 bells.

I have 8 goats. 5 of my goats run away. I now have . . . goats.

3 rats are in a box. I put 5 rats in the box. How many rats are now in the box?

5 and . . . are 8. 8 less . . . are 5.

3 + 5 = . . . 8 − 5 = . . .

Teach "goats." Ask pupils to make up new oral problems about 3's. Pupils may copy script.

A chair and . . . cups.

There are . . . cups on the chair and . . . cups under the chair.

6 cups and 3 cups are . . . cups.

9 cups less 3 cups are . . . cups.

3 cups and 6 cups are .....cups.

9 chairs less 3 chairs are.....chairs.

9 men less 6 men are.....men.

6 rats and 3 rats are.....rats.

How many fishes are 3 fishes and 6 fishes?

How many nests are 9 nests less 6 nests?

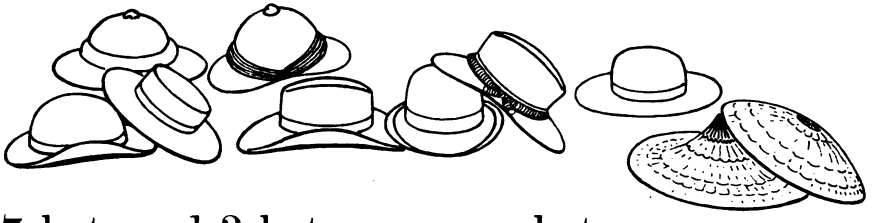
3 goats and . . . goats are 9 goats.

9 hands less . . . hands are 3 hands.

$6 + 3 = \ldots$ $\quad$ $9 - 3 = \ldots$

$3 + 6 = \ldots$ $\quad$ $9 - 6 = \ldots$

Teach "6 + 3," etc., from the blackboard and with objects, then with oral problems. Encourage pupils to make new problems. Teach "chair," "men," and "under."



7 hats and 3 hats are . . . hats.
How many men are 7 men and 3 men?
How many boys are 5 boys and 3 boys?
How many girls are 6 girls and 3 girls?
How many hats are 3 hats and 7 hats?

7 horses and . . . horses are 10 horses.
10 hats less 3 hats are . . . hats.

How many trees are 10 trees less 3 trees?
How many hats are 10 hats less 7 hats?
10 balls less 7 balls are . . . balls.

There are 10 boys in a house. 7 boys walk away. How many boys are now in the house?

10 ants are in a blue jar. 3 ants run away. There are now . . . ants in the blue jar.

I have 7 dogs. John has 3 dogs. How many dogs have John and I?

Review "9 + 1," "8 + 2," on pages 50 and 62.

Maria has 3 pencils. I give her 3 pencils.
How many pencils has she now?

Frank has 7 birds. 4 birds fly away.
Frank now has . . . birds.

There are 6 ants in my cup and 3 ants in your cup. How many ants are in the cups?

I have 10 bananas. A big boy eats 7 bananas.
I now have . . . bananas.

There are 8 men at my house. 5 men walk away. How many men are now at my house?

I have 3 eggs on my hat and 4 eggs under my hat. How many eggs have I?

There are 3 nuts in my little black box.
Frank puts 5 nuts in my box.
There are now . . . nuts in my little black box.

$7 - \ldots = 3$	$10 - \ldots = 3$
$5 - \ldots = 3$	$6 - \ldots = 3$
$8 - \ldots = 3$	$9 - \ldots = 3$
$\ldots + 7 = 10$	$\ldots + 5 = 8$

Review counting by adding and subtracting 3's. Use oral problems. Have rapid oral abstract drill.

9 −	7 −	10 −	8 −	1 +	3 +
8	6	9	7	5	5

9 −	2 +	3 +	10 −	2 +	6 −
6	4	4	7	7	2

Paul had 6 balls. He gives me 6 balls. How many balls has he now?

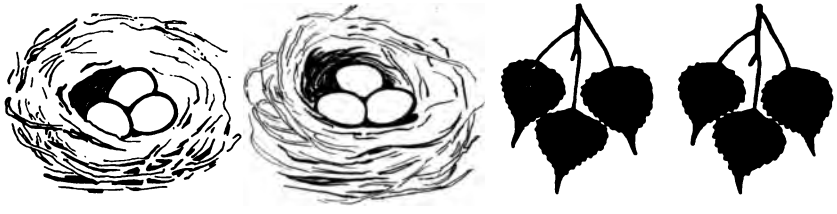
I have 9 pencils. You take 8 pencils. I now have . . . pencil.

10 rats are in a box. 9 rats run away. How many rats are now in the box?

Maria has 5 pins. Louisa has 3 pins. Maria and Louisa have . . . pins.

Paul has 7 kites. Frank has 3 kites. How many kites have Paul and Frank?

10 birds are in a tree. 10 birds fly away. How many birds are now in the tree?



Here are..... eggs and..... leaves.
Here are..... 3's of eggs.
Here are..... 3's of leaves.
Two 3's of eggs are..... eggs.
Two 3's of leaves are..... leaves.
There are..... 3's of eggs in 6 eggs.
There are..... 3's of leaves in 6 leaves.

Two 3's of caps are . . . caps.
2 3's of hats are . . . hats.
There are . . . 3's of birds in 6 birds.
In 6 balls there are . . . 3's of balls.
In 6 rats there are . . . 3's of rats.
In 6 fans there are . . . 3's of fans.

2 3's are . . . In 6 there are . . . 3's.

Teach 2 3's. Review page 75.

Here I see..... bananas.
There are.....3's of bananas.
3 3's of bananas are.....bananas.
There are.....oranges.
There are.....3's of oranges.
9 oranges are.....3's of oranges.
3 3's of hats are.....hats.
9 leaves are.....3's of leaves.

How many 3's of balls in 9 balls?
How many 3's of pens in 9 pens?
In 9 ants there are . . . 3's of ants.
How many birds are 3 3's of birds?

3 3's are . . . In 9 there are . . . 3's.

2 3's are.....

3 3's are.....

6 are.....3's.

9 are.....3's.

2 3's of books are.....books.

6 slates are..... 3's of slates.

3 3's of pens are.....pens.

9 pencils are.....3's of pencils.

Draw 3 3's of tops.

Draw 2 3's of squares.

How many 3's of tops are 9 tops?

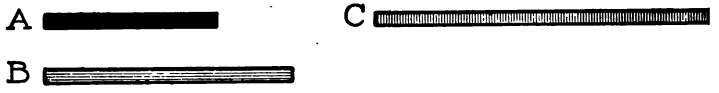
6 squares are . . . 3's of squares.

Frank has 3 hats and 3 balls in each hat.
How many balls has he in his hats?

There are 3 trees and 3 birds in each tree.
How many birds are in the trees?

Draw 2 3's of jars.

Review 3's. Pupils may copy script. Continue counting by 1's, 2's, 3's, to 12 or more. Find the pages of books by number. Review pages 64 to 69.



Find three sticks as long as the line *A*.
Find five sticks as long as the line *C*.
Find four sticks as long as the line *B*.
Make three sticks as long as the line *C*.
Make four sticks as long as the line *A*.
Make five sticks as long as the line *B*.
Draw two lines as long as the line *C*.

Find five squares as large as the square *B*.
Find four squares as large as the square *A*.
Find six squares as large as the square *C*.
Make two sticks as long as the square *C*.
Make three sticks as long as the square *B*.
Draw a square larger than the square *C*.
Draw a square smaller than the square *A*.

Review page 70. Teach "as large as," "larger than," and "smaller than." Teach orally "largest" and "smallest." Cut sticks and squares of paper or leaves of sizes *A*, *B*, and *C*. Have pupils find those of same size. Make and draw "as long," or "as large," etc.

3 circles and 4 circles are . . . circles.

3 oranges and 4 oranges are . . . oranges.

3 and 4 are . . .

4 squares and 4 squares are . . . squares.

4 slates and 4 slates are . . . slates.

4 and 4 are . . .

5 triangles and 4 triangles are . . . triangles.

5 kites and 4 kites are . . . kites.

5 and 4 are . . .

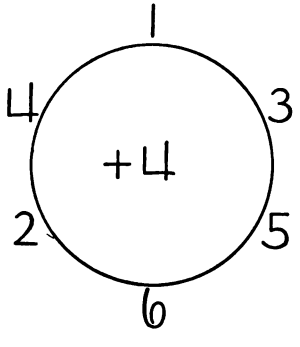
6 cubes and 4 cubes are . . . cubes.

6 boxes and 4 boxes are . . . boxes.

6 and 4 are . . .

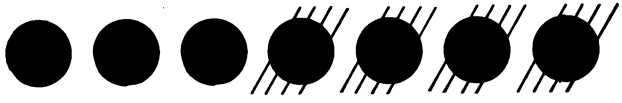
Teach to know groups of 4 objects without counting. Teach orally to count by adding 4's, as 4, 8, 12, and 1, 5, 9, using objects as in 1's, 2's, and 3's. Then take "1 + 4," "2 + 4," etc., to "6 + 4," with objects. Continue counting until pupils have learned results. Then use book, the pupils reading and filling blanks orally. Teach "triangle."

How many cups are 1 cup and 4 cups?
How many nuts are 2 nuts and 4 nuts?
3 books and 4 books are . . . books.
How many girls are 3 girls and 4 girls?
3 slates and 4 slates are . . . slates.
How many ants are 4 ants and 4 ants?
How many frogs are 4 frogs and 4 frogs?
4 tops and 4 tops are . . . tops.
5 eggs and 4 eggs are . . . eggs.
5 birds and 4 birds are . . . birds.
How many men are 5 men and 4 men?
6 horses and 4 horses are . . . horses.
6 bananas and 4 bananas are . . . bananas.
How many goats are 6 goats and 4 goats?



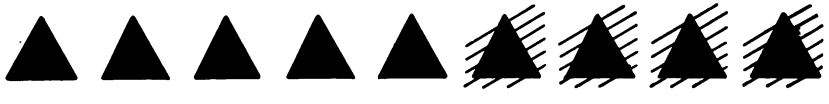
1 and 4 are . . .
2 + 4 = . . .
3 + 4 = . . .
4 + 4 = . . .
5 + 4 = . . .
6 + 4 = . . .

Continue counting by adding 4's. Use many oral problems. Pupils copy and learn the table of 4's. Pupils write problems from the circle.



7 circles less 4 circles are . . . circles.
7 balls less 4 balls are . . . balls.
7 less 4 are . . .

8 squares less 4 squares are . . . squares.
8 slates less 4 slates are . . . slates.
8 less 4 are . .



9 triangles less 4 triangles are . . . triangles.
9 fans less 4 fans are . . . fans.
9 less 4 are . . .

10 cubes less 4 cubes are . . . cubes.
10 boxes less 4 boxes are . . . boxes.
10 less 4 are . . .

Teach subtracting of 4's. Use orally objects and problems before using this page. Review by reading pages 55 and 56, 73 and 74.

4 caps less 4 caps are . . . caps.
How many hats are 5 hats less 4 hats?
How many pigs are 6 pigs less 4 pigs?
How many books are 7 books less 4 books?
8 balls less 4 balls are . . . balls.
How many cubes are 9 cubes less 4 cubes?
How many fishes are 10 fishes less 4 fishes?
4 boys and 4 boys are . . . boys.
4 boys less 4 boys are . . . boys.
How many leaves are 5 leaves and 4 leaves?
How many trees are 5 trees less 4 trees?
10 rats less 4 rats are . . . rats.
6 hens and 4 hens are . . . hens.
How many frogs are 9 frogs less 4 frogs?

10 less 4 are . . .	4 less 4 are . . .
9 − 4 = . . .	5 − 4 = . . .
8 − 4 = . . .	6 − 4 = . . .
7 − 4 = . . .	7 − 4 = . . .
6 − 4 = . . .	8 − 4 = . . .
5 − 4 = . . .	9 − 4 = . . .
4 − 4 = . . .	10 − 4 = . . .

Pupils should copy and learn the tables of 4's.

A spider has . . . legs.
A bee has . . . legs.
A dog has . . . legs.
A bird has . . . legs.
Four legs and four legs are . . . legs.

How many ants are 4 ants and 4 ants?
How many spiders are 3 spiders and 3 spiders?

How many feet are 2 feet and 2 feet?
How many legs are 8 legs less 4 legs?

8 spiders less 4 spiders are . . . spiders.
4 and 4 are . . . 8 less 4 are . . .

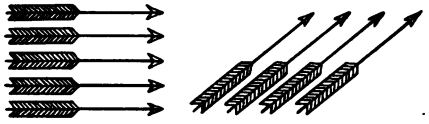
How many spiders are 4 spiders less 4 spiders?
How many men are 8 men less 8 men?

I draw 4 spiders. Maria draws 4 spiders. Maria and I draw . . . spiders.

John finds 8 pins. Louisa takes 4 pins. How many pins has John now?

8 pens are in my hand. You take 8 pens. I now have in my hand . . . pens.

Teach "spider." Have pupils continue counting by 4's as far as they can.



3 and 4 are.....

4 and 4 are.....

5 arrows and 4 arrows are.....arrows.

5 spiders and 4 spiders are.....spiders.

9 arrows less 4 arrows are.....arrows.

9 spiders less 5 spiders are.....spiders.

Mamma has 5 fans. I give her 4 fans.
She now has . . . fans.

I have 4 pens. I find 5 pens under my book.
I now have . . . pens.

How many hats are 9 hats less 4 hats?

9 boys less . . . boys are 5 boys.

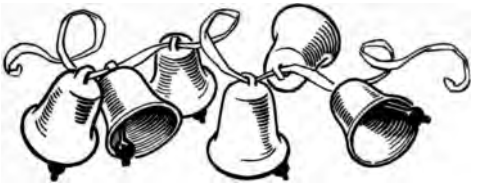
How many nuts are 9 nuts less 5 nuts?

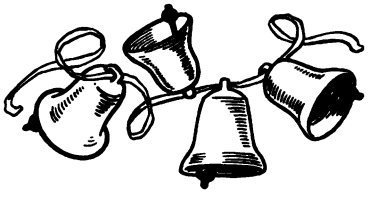
9 men are under a tree. 5 men walk away.
How many men are now under the tree?

9 men less . . . men are 4 men.

$4 + 5 = . . .$ $5 + 4 = . . .$ $9 - 4 = . . .$

Teach "mamma." Practice with oral problems using "on," "in," "at," "to," and "under." Have pupils make problems about 9. Read pages 49, 61, 78, and 83.

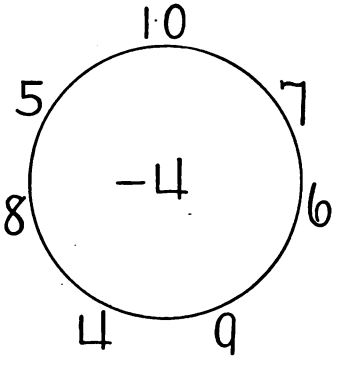




6 bells and 4 bells are . . . bells.
6 tops and 4 tops are . . . tops.
How many men are 6 men and 4 men?
4 bells and 6 bells are . . . bells.
How many hats are 4 hats and 6 hats?
6 tops and . . . tops are 10 tops.
4 pens and . . . pens are 10 pens.
6 and 4 are . . . 4 and 6 are . . .
10 bells less 4 bells are . . . bells.
How many ants are 10 ants less 4 ants?
10 balls are on my slate. I take away 4 balls.
There are now . . . balls on my slate.
10 bells less 6 bells are . . . bells.
10 horses less 6 horses are . . . horses.
Frank finds 10 birds. 6 birds fly away.
He now has . . . birds.
10 less 4 are . . . 10 less 6 are . . .

Read in review pages 50, 62, and 73. Have oral problems. Have pupils make problems about 10.

7 +	2 +	6 +	1 +
3	8	4	9
4 +	9 −	8 −	10 −
3	2	4	3



Mamma has 10 bananas. She gives me 4 bananas. She now has . . . bananas.

I give Papa 3 hats. Mamma gives him 4 hats. Papa now has . . . hats.

Papa finds 9 pencils. He gives me 5 pencils. How many pencils has he now?

6 fishes are in the water.

I put 4 fishes in the water.

There are now . . . fishes in the water.

10 eggs are in a nest. Frank takes 6 eggs. How many eggs are now in the nest?

. . . − 4 = 3 8 − . . . = 3

. . . − 4 = 4 9 − . . . = 7

Review 4's. Give many oral problems. Review also 1's, 2's, and 3's. Have pupils write series from memory. Give oral abstract problems.

How many balls are 1 ball and 1 ball?
How many hats are 1 hat and 1 hat?
How many 1's of balls are 2 balls?
How many 1's of hats are 2 hats?
Two 1's of balls are . . . balls.
Two 1's of hats are . . . hats.
Two 1's of boys are . . . boys.
Two 1's of horses are . . . horses.
Two 1's are . . . How many 1's in 2?
2 eggs and 2 eggs are . . . eggs.
2 birds and 2 birds are . . . birds.
2 dogs and 2 dogs are . . . dogs.
Two 2's of eggs are . . . eggs.
Two 2's of birds are . . . birds.
Two 2's of flags are . . . flags.
How many 2's of eggs are 4 eggs?
How many 2's of pens are 4 pens?
How many 2's of girls are 4 girls?
Two 1's are . . . In 2 there are . . . 1's.
Two 2's are . . . In 4 there are . . . 2's.

Teach orally "2 1's are 2," "2 2's are 4." Read pages 15, 16, 17, 18, 19, and 64.

3 and 3 are . . . 4 and 4 are . . .
How many rats are 3 rats and 3 rats?
3 jars and 3 jars are . . . jars.
Two 3's of rats are . . . rats.
Two 3's of jars are . . . jars.
Two 3's of pens are . . . pens.
How many 3's of boys are 6 boys?
How many 3's of men are 6 men?
How many legs are 4 legs and 4 legs?
How many spiders are 4 spiders and 4 spiders?
4 hats and 4 hats are . . . hats.
Two 4's of hats are . . . hats.
Two 4's of fishes are . . . fishes.
Two 4's of slates are . . . slates.

Two 4's of men are.....men.
Two dogs have.....legs.
Two birds have.....wings.
Two 3's of pens are.....pens.
Two 2's of trees are.....trees.

Review pages 64, 82, and 90. Pupils copy script.

5 baskets and 5 baskets are .....baskets.
10 baskets less 5 baskets are .....baskets.
Two 5's of baskets are .....baskets.

How many books are 10 books less 5 books?
How many kites are 10 kites less 5 kites?
John has 10 oranges. Frank eats 5 oranges.
How many oranges has John now?
How many 5's of baskets are 10 baskets?
How many 5's of trees are 10 trees?
Two 5's of books are . . . books.
Two 5's of bells are . . . bells.
I have 10 balls. I have . . . 5's of balls.
Draw two 4's of trees.
Draw two 5's of circles.

Teach "basket" and "5 + 5," "10 − 5," and "2 5's." Pupils copy script and invent new oral problems. Count by 5's to 20, or more.

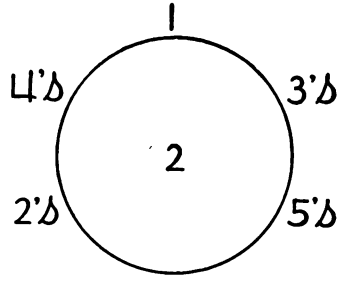
Two 1's are .....

2 2's = ...

2 3's = ...

2 4's = ...

2 5's = ...



I have 2 boxes and 1 pencil in each box. How many pencils have I in my boxes?

Mamma has 2 baskets and 3 fishes in each basket. Mamma has . . . fishes in her baskets.

Maria sees 2 trees and 5 birds in each tree. Maria sees . . . birds in the trees.

There are 2 houses and 4 men in each house. How many men are in the houses?

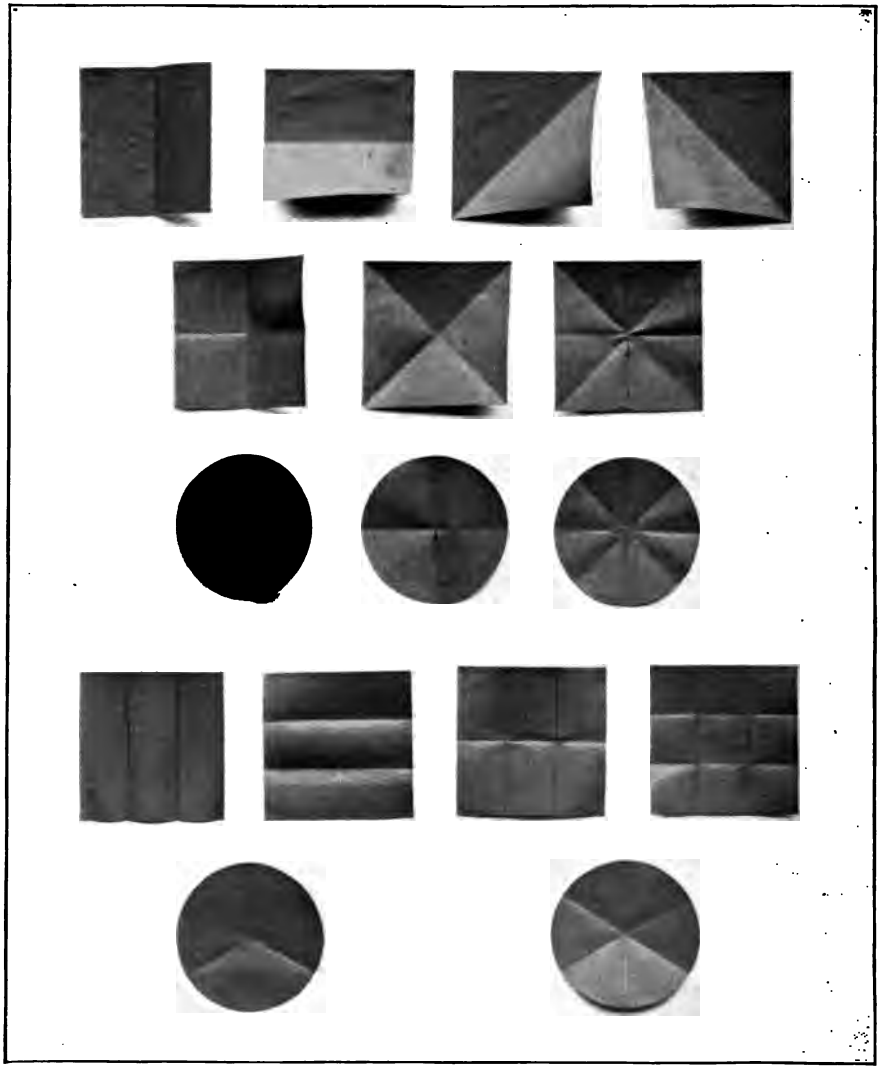
There are 2 nuts and 2 ants on each nut. How many ants are on the nuts?

I have 4 oranges. I have . . . 2's of oranges.

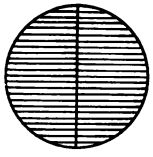
John has 8 pens. He has . . . 4's of pens.

Draw 2 nests and 4 eggs in each nest.

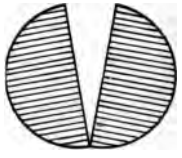
Review with many oral problems. Pupils copy script. Pupils may continue series objectively, as, "2 6's," "2 7's," etc.

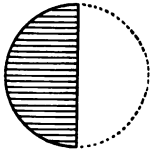


Paper folding. Teach pupils to fold squares, circles, etc., into "**2, 4, or 8** parts." and "3, 6, or 9 parts." Cut sticks, leaves, etc., into parts.



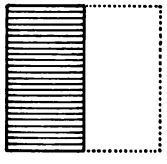
A circle has 2 halves.

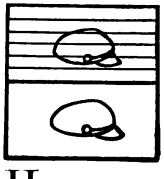




This is one half of a circle.

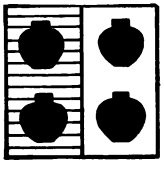
This is one half of a square.





One half of 2 caps is . . . cap.
One half of 2 hats is . . . hat.
One half of 2 balls is . . . ball.

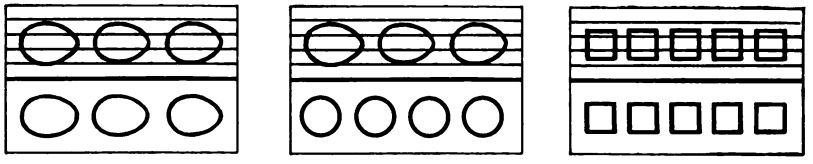
How many stars are one half of 2 stars?
How many birds are one half of 2 birds?



One half of 4 jars are . . . jars.
One half of 4 pens are . . . pens.
One half of 4 boys are . . . boys.

How many fishes are one half of 4 fishes?
How many books are one half of 4 books?
One half of 2 is . . . One half of 4 are . . .

Teach "half" and "halves." Have several oral lessons before using the book. Have pupils fold paper into halves, divide sticks, crayons, lines, squares, circles, etc., into halves, and also 2, 4, 6, 8, and 10 objects. Pupils illustrate by drawings.



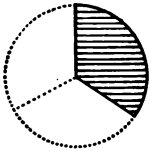
One half of 6 eggs are . . . eggs.
How many circles are ½ of 8 circles?
½ of 10 squares are . . . squares.
½ of 6 balls are . . . balls.
How many slates are ½ of 6 slates?
How many oranges are ½ of 8 oranges?
½ of 8 birds are . . . birds.
½ of 10 fans are . . . fans.
How many boys are ½ of 10 boys?
How many bananas are ½ of 4 bananas?
How many pens are ½ of 10 pens?

½ of 4 caps are ..... caps.
½ of 6 kites are ..... kites.
½ of 8 stars are ..... stars.
½ of 2 = ... ½ of 6 = ...
½ of 4 = ... ½ of 8 = ...

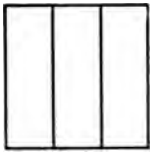
How many halves of circles in 2 circles?
How many halves of oranges in 4 oranges?
How many halves of oranges in 5 oranges?
I have 3 bananas.
How many halves of bananas have I?
I have ½ of 8 pens. How many pens have I?
I have 4 nuts. How many halves of nuts have I?
John has ½ of 10 pens. John has . . . pens.
Maria has ½ of 6 fans. She gives Louisa 3 fans. How many fans has Maria now?
I have 4 horses. ½ of my horses run away.
How many of my horses run away?
How many horses have I now?
There are 10 bananas in a box.
John eats ½ of the bananas.
John eats . . . bananas.

In 2 there are . . . 1's.	½ of 2 = . . .
In 4 there are . . . 2's.	½ of 4 = . . .
In 6 there are . . . 3's.	½ of 6 = . . .
In 8 there are . . . 4's.	½ of 8 = . . .

Have many oral problems. Pupils may copy and learn tables of one half.

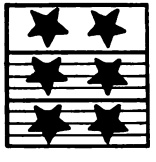


This is one third of a circle.
A circle has . . . thirds.
A square has . . . thirds.

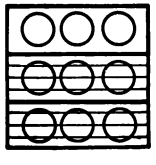


2 circles have . . . thirds.
3 squares have . . . thirds.

One third of 3 jars is . . . jar.
$\frac{1}{3}$ of 3 balls is . . . ball.
$\frac{1}{3}$ of 3 oranges is . . . orange.



$\frac{1}{3}$ of 6 stars are . . . stars.
$\frac{1}{3}$ of 6 pins are . . . pins.
$\frac{1}{3}$ of 6 boys are . . . boys.



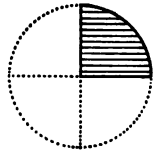
$\frac{1}{3}$ of 9 circles are . . . circles.
$\frac{1}{3}$ of 9 bananas are . . . bananas.
$\frac{1}{3}$ of 9 goats are . . . goats.

I have $\frac{1}{3}$ of 6 caps. I have . . . caps.

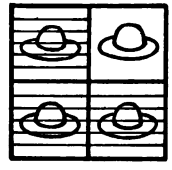
3 1's = . . .	$\frac{1}{3}$ of 3 = . . .
3 2's = . . .	$\frac{1}{3}$ of 6 = . . .
3 3's = . . .	$\frac{1}{3}$ of 9 = . . .

Teach $\frac{1}{3}$. Review pages 82, 83, and 84. Have pupils divide lines, squares, circles, sticks, crayons, etc., into thirds. Use oral problems. Pupils copy and learn thirds.

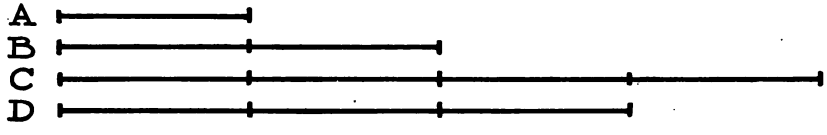
This is one fourth of a circle.



How many fourths has a circle?
How many fourths has a square?
How many fourths have 2 squares?
One fourth of 4 hats is . . . hat.



$\frac{1}{4}$ of four boys is . . . boy.
$\frac{1}{4}$ of 4 men is . . . man.
How many 2's of hats in 8 hats?
How many hats are $\frac{1}{4}$ of 8 hats?
I have $\frac{1}{4}$ of 8 horses. I have . . . horses.



Line *A* is . . . of line *B*. *A* is . . . of *C*.
Line *A* is . . . of line *D*. *B* is . . . of *D*.

A is . . . of *B*.
A is . . . of *C*.

Teach $\frac{1}{4}$. Use objects, etc., as in $\frac{1}{3}$. Use oral problems. Review 2 4's. Find halves, thirds, and fourths of lines. Draw squares and oblongs in the relation of halves, thirds, and fourths, as *A*, *B*, and *C*.

4 + 2 = ...	3 + 4 = ...
..... + ... = 6	1 + ... = 7
..... + ... = 6	..... + ... = 7
..... + ... = 6	..... + ... = 7
6 − 4 = ...	7 − 7 = ...
6 − ..... = ...	7 − ..... = ...
6 − ..... = ...	7 − ..... = ...
6 − 6 = ...	7 − ..... = ...
3 + 3 = ...	3 + 3 + 1 = ...
2 3's = ...	4 + 2 + 1 = ...
2 + 2 + 2 = ...	1 + 5 + 1 = ...
3 2's = ...	7 − ..... = 2
$\frac{1}{2}$ of 6 = ...	10 − ..... = 3
$\frac{1}{3}$ of 6 = ...	9 − 7 = ...

Review pages 34, 36, 47, 57, 64, 82, 100, and 102, for 6's, and **47, 48, 58,** and 76, for 7's. Pupils should copy this page, filling the blanks.

..... + ... = 8	8 − ..... = ...
..... + ... = 8	8 − ..... = ...
..... + ... = 8	8 − ..... = ...
..... + ... = 8	8 − ..... = ...
..... + ... = 8	8 − ..... = ...
..... + ... = 8	8 − ..... = ...
..... + ... = 8	8 − ..... = ...
10 − 8 = ...	8 − ..... = 0
9 − ..... = 8	10 − 2 = ...
8 − 8 = ...	9 − 8 = ...
2 + 2 + 2 + 2 = ...	4 + 4 = ...
4 2's = ...	2 4's = ...
In 8 = ...2's	½ of 8 = ...
5 + 2 + 1 = ...	1 + 4 + 3 = ...

Review pages 48, 49, 59, 60, 62, 66, 67, 77, 90, 95, 100, 101, and 103, and give oral problems.

.....+.....= 9	9 −.....=.....
.....+.....= 9	9 −.....=.....
.....+.....= 9	9 −.....=.....
.....+.....= 9	9 −.....=.....
.....+.....= 9	9 −.....=.....
.....+.....= 9	9 −.....=.....
.....+.....= 9	9 −.....=.....
10 −.....= 9	9 −.....= 3
9 − 9 =.....	9 − .....= 2
9 − 5 =.....	3 + 3 + 3 =.....
4+ 5+ 1+	3 3's =.....
4 2 3	⅓ of 9 =.....
1 2 5	In 9 =.....3's.
— — —	

Review pages 49, 50, 61, 78, 83, 91, and 102, and give **oral problems.** Pupils should copy this page, completing the problems.

.....+.....= 10	10 −.....=.....
.....+.....= 10	10 −.....=.....
.....+.....= 10	10 −.....=.....
.....+.....= 10	10 −.....=.....
.....+.....= 10	10 −.....=.....
.....+.....= 10	10 −.....=.....
.....+.....= 10	10 −.....=.....
.....+.....= 10	10 −.....=.....
10 − 10 =.....	10 − 4 =.....
10 −.....= 1	5 +.....= 10
10 −.....= 3	2 +.....= 10
5 + 5 =.....	2+2+2+2+2=.....
2 5's =.....	5 2's =.....
½ of 10 =.....	In 10 are..... 2's.

Review pages 50, 52, 62, 68, 69, 79, 92, and 100. Pupils copy page, completing the problems.

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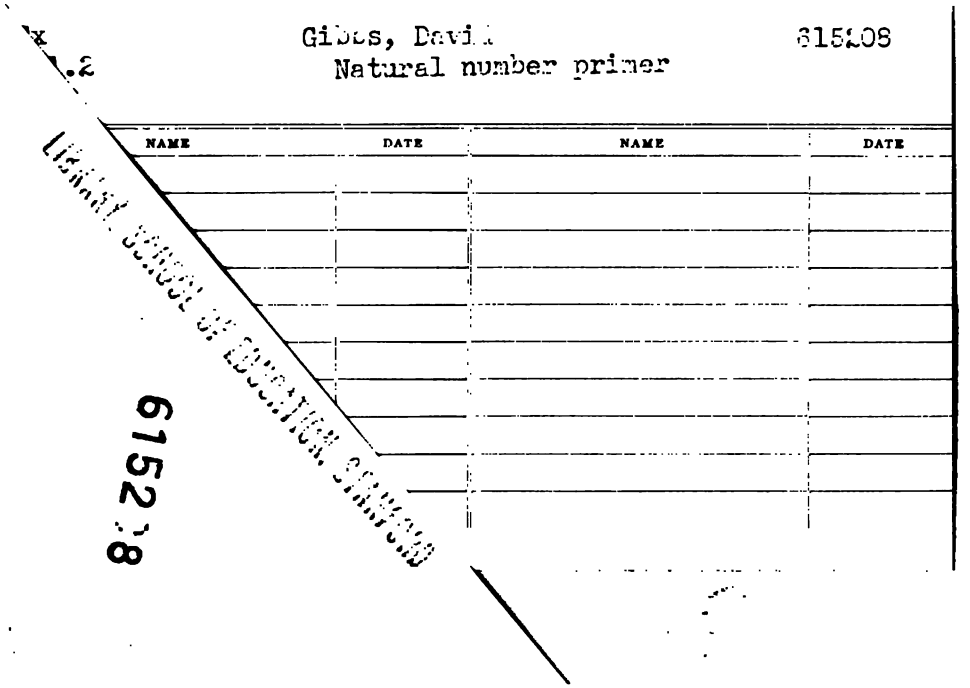
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